SCREENING SITE INSPECTION REPORT

of

CABOT LANDFILL

(ARD983269275)

Prepared By:

Debra Pandak, Task Manager

ICF Technology Inc.
Region 6

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1.0 INTRODUCTION

The Region 6 ARCS Contractor, MK-Environmental Services and ICF Technology (MK/ICF), was tasked by the U.S. Environmental Protection Agency (EPA) under ARCS Contract No. 68-W9-0025 and Work Assignment No. 30-6JZZ to complete the Screening Site Inspection (SSI) of Cabot Landfill, (ARD983269275) in Cabot, Lonoke County, Arkansas, originally tasked under Technical Directive Document (TDD) F06-9002-16 to the Region 6 Field Investigation Team (FIT). The MK/ICF Task Manager relied on the information provided by the previous FIT Task Manager to finish this task. Additional data collection was conducted on a limited basis.

1.1 SCREENING SITE INSPECTION OBJECTIVES

The SSI evaluates the potential risks associated with hazardous waste generation, storage and disposal at the site. It expands upon data collected during the Preliminary Assessment (PA) and identifies data gaps. Information obtained during the SSI supports the management decision of whether the site proceeds to the Expanded Site Inspection (ESI) or receives the classification of No Further Action under the Superfund Amendments and Reauthorization Act (SARA).

2.0 SITE DESCRIPTION AND OPERATIONAL HISTORY

This section addresses site location, operational history, source characterization, potential alternate sources and past or current regulatory status of the site.

2.1 SITE LOCATION

The Cabot Landfill is located ¼ mile west of the northern end of Willie Ray Road in Cabot, Lonoke County, Arkansas. The legal description of the landfill property is Lot 1, Lot 2 and the southwest quarter of Lot 5 of Section 6, Township 4 North, Range 9 West (Ref. 42). The geographical coordinates are 34°59'45" north latitude and 92°01'00" west longitude (Ref. 1, p. 1) (Figure 1). A potential hazardous waste site identification form, EPA Form 2070-8, was completed as a result of a citizen's complaint (Ref. 15). The citizen stated that the landfill had received wastes from the Vertac Superfund Site in Jacksonville, Arkansas (Ref. 15; Ref. 16; Ref. 17).

2.2 OPERATIONAL HISTORY

The landfill was primarily used for the disposal of domestic, commercial and industrial wastes. The landfill also received and disposed of used tires. The site was expanded via purchase of private holdings by the City of Cabot in December 1977 (Ref. 2, p. 3) (Figure 2). The City of Cabot owns 118.25 acres of which 14.9 is permitted to be used as a landfill (Ref. 1, p. 1; Ref. 5, p. 1; Ref. 42). The State of Arkansas Commission on Pollution Control and Ecology permitted 6.4 acres for landfill use on July 25, 1975 and approved an additional 8.5 acres on March 16, 1981 (Ref. 1, p. 1; Ref. 5, p. 1). A State inspection conducted on June 24, 1980 found that the landfill had extended beyond its permitted or approved boundaries (Ref. 34, p. 4). There is no documentation available as to the extent the landfill has exceeded its 14.9 acres permitted boundary.

Cabot Landfill was cited by the Arkansas Department of Pollution Control and Ecology (ADPC&E) for exceeding permitted boundaries, leachate problems, and overall "poor housekeeping" (Ref. 34). An ADPC&E inspection on February 18, 1981 revealed thirty-four 55-gallon drums on-site

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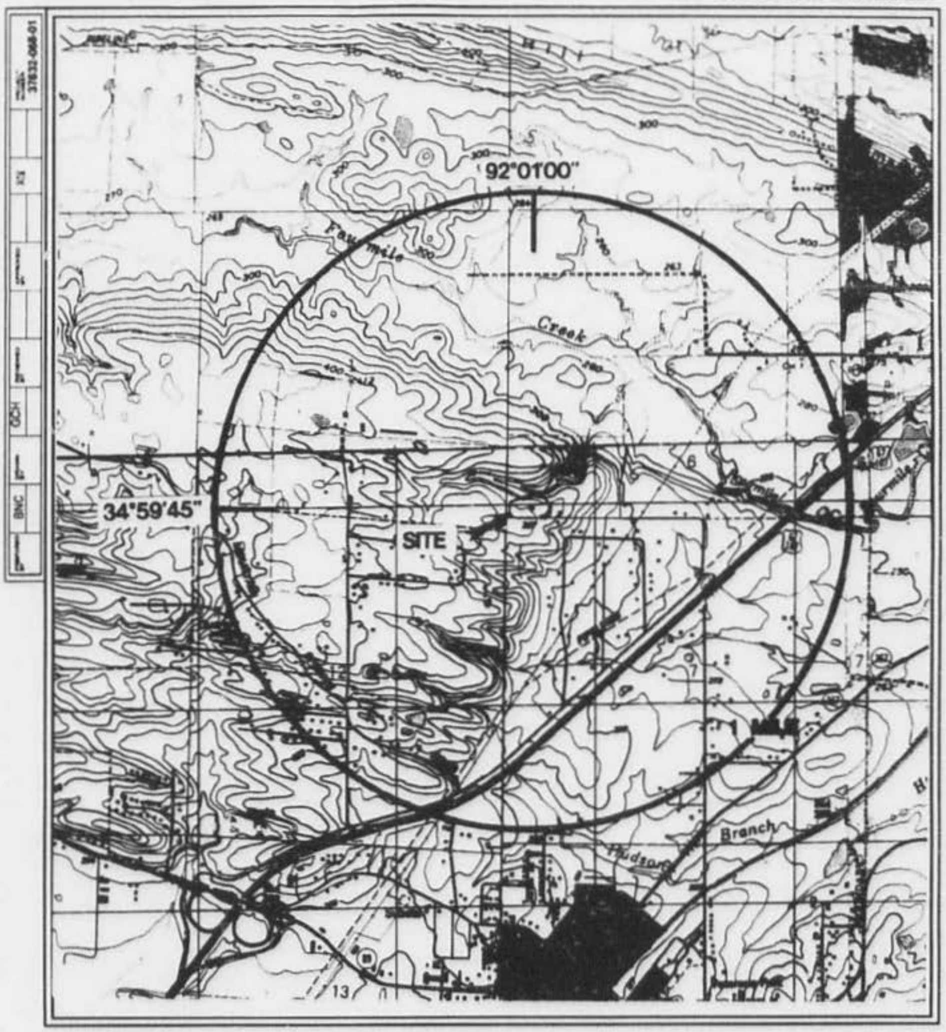

FIGURE 1
SITE LOCATION MAP
CABOT LANDFILL
CABOT, ARKANSAS.

CERCLIS #ARD983269275

QUADRANGLE LOCATION
CABOT, ARK. 1987
MOUNTAIN SPRINGS, ARK. 1981
OAKGROVE, ARK. 1982
BEEBE, ARK. 1981

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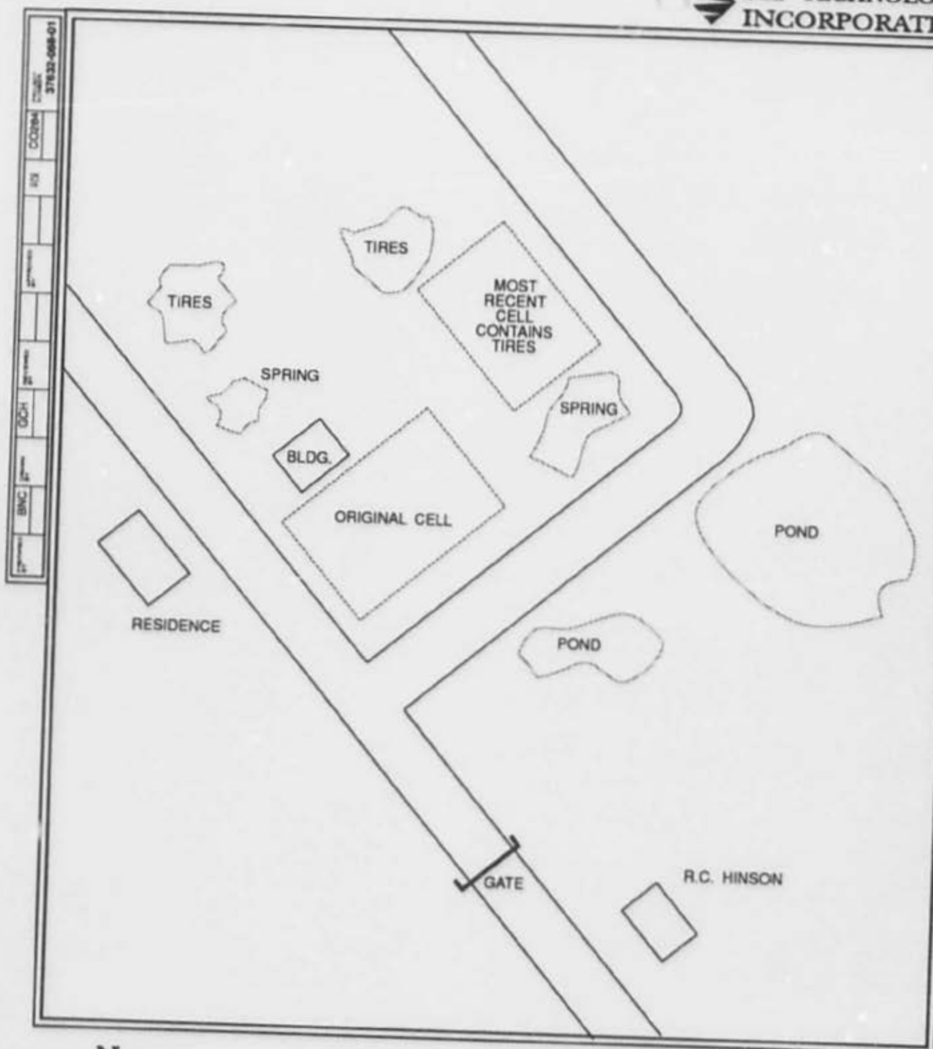

N

NOT TO SCALE

Reference:
Ecology & Environment
FIT Site Investigation Workplan

FIGURE 2
SITE SKETCH
CABOT LANDFILL
CABOT, ARKANSAS.

CERCLIS #ARD983269275

QUADRANGLE LOCATION
CABOT 1987
MOUNTAIN SPRING 1981
OAKGROVE 1982
BEEBE 1981

(Ref. 34, p. 1; Ref. 39, p. 1). The majority of the drums were labeled paint stripper and several drums were bulging at the ends (Ref. 39, p. 1). The drums were addressed to be shipped to Falcon Jet of Little Rock, Arkansas. One drum was labeled Dreamline Manufacturing, Cabot, Arkansas. Two drums of Penwalt E-Z Strip were resting on their sides and leaking. There was also one drum of adhesive that had been leaking (Ref. 39, p. 1). The drums were removed from the landfill by the depositor at the request of the City of Cabot (Ref. 7).

A resident near the landfill stated that there is an abandoned well beneath the landfill. He also claimed that there are springs located in the landfill. The well is plugged and is not located in either of the landfill's cells (Ref. 7).

Wastes disposed at the site were supposed to have been covered daily with 6 inches of compacted soil. A final cover consisting of 2 feet of compacted clay and 4 inches of topsoil was to be applied and seeded at closure. The landfill was 75% closed by December 22, 1986. Final closure was scheduled for September 15, 1987 by the ADPC&E (Ref. 1, p. 1; Ref. 40).

A PA report was prepared by Ecology and Environment, Inc. (E&E) for the EPA under Technical Directive Document (TDD) F06-9009-14, on October 31, 1991 (Ref. 1, p. 1). The on-site reconnaissance inspection for completion of the SSI was conducted January 26, 1991. The FIT team included Michael Watson, Team Leader, and Julie Koke, Site Safety Officer of E&E. They were accompanied on-site by Andy Dedman, Public Works Supervisor, City of Cabot, Arkansas. (b) (6) [redacted], a local resident, was interviewed and consented to have his well sampled during the sampling investigation.

The site was easily accessible and not restricted by vegetation or debris. The landfill is in a remote area and is not fenced or guarded. The landfill entrance road is blocked by a gate. The ground cover is thick and healthy. Stressed vegetation was not noted anywhere on-site. The FIT did not detect any noticeable odors. Bridging appears to have occurred on-site with the resultant collapse at some time in the past (Ref. 46).

2.3 SOURCE EVALUATION

The only documented source at the City of Cabot Landfill is the landfill itself. The landfill consisted of two cells and the permitted capacity was 14.9 acres (Ref. 1, p. 1). The City of Cabot was cited for numerous violations by the ADPC&E for placing waste outside of the permitted area; the actual area that received wastes is not known. There is no documentation stating whether the cells of the landfill were lined, and the City of Cabot Landfill has a history of "poor housekeeping" (Ref. 34). There are two leachate springs originating from below the landfill (Figure 2). These springs feed into two drainage ditches that eventually feed into Four-mile Creek (Ref. 11). Sampling of both the sediments and water from these leachate seeps indicated the presence of hazardous constituents, including polynuclear aromatic compounds, emanating from the landfill (Tables 1 and 2) (Appendix A). The landfill is covered by a 2-foot compacted clay cap; however, during the on-site reconnaissance the FIT noted places where the landfill cap had bridged and collapsed causing breaks or depressions in the cap surface. In addition to the landfill, three other potential on-site sources exist; two tire waste piles and an on-site pond. The tire piles are marked on a site sketch contained in the on-site reconnaissance log book prepared by Ecology and Environment, Inc.; however, no other information regarding the tire piles exist (Ref. 43). Two on-site ponds are present at the landfill. Documentation suggests the ponds are used as stock ponds and that deer typically utilize the ponds as a water source.

TABLE 1

SOURCE SAMPLES: SOIL ANALYTICAL RESULTS

(All Concentrations are Expressed in Parts Per Million)

Contaminant	S-06 (Background)	S-03 (Spring No. 2)	S-01 (Spring No. 1)	S-05 (Spring No. 1, Duplicate)	S-07 (Stock Pond)
Copper	6.10	26.10	18.70	8.20	4.9
Cyanide	ND	2.00	ND	ND	0.20
Chlorobenzene	ND	ND	.003^J	.007^J	ND
Calcium	264	1,450	715	790	1,150
Iron	31,300	94,000	32,500	40,400	22,800
Magnesium	355	775	1,090	871	638
Xylene	ND	ND	ND	.002	ND
Naphthalene	ND	.043^J	ND	ND	ND
Phenanthrene	ND	.39^J	ND	ND	ND
Anthracene	ND	.091^J	ND	ND	ND
Fluoranthene	ND	.48^J	ND	ND	ND
Pyrene	ND	.46^J	ND	ND	ND
Benzo(a)anthracene	ND	.19^J	ND	ND	ND
Chrysene	ND	.21^J	ND	ND	ND
Benzo(b)fluoranthene	ND	.15^J	ND	ND	ND
Benzo(k)fluoranthene	ND	.17^J	ND	ND	ND
Benzo(a)pyrene	ND	.17^J	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ND	.12^J	ND	ND	ND

ND Not Detected
J Estimated Concentration due to TCL less than CRQL, or TCL with QA/QC out of control limits

0 0 4

TABLE 2

SOURCE SAMPLES: WATER ANALYTICAL RESULTS

(All Concentrations are Expressed in Parts Per Million)

Contaminant	W-01 (Spring No. 1)	W-05 (Spring No. 1, Duplicate)	W-03 (Spring No. 2)	W-07 (Stock Pond)
Iron	15.5^{J}	17.0^{J}	56.3^{J}	4.22^{J}
Magnesium	17.9	17.9	.11600	3.47
Chloroethane	.007^{J}	.011	ND	ND
Carbon Disulfide	.003^{J}	ND	ND	ND
1,1-Dichloroethane	.003^{J}	.004^{J}	ND	ND
Benzene	ND	ND	.008^{J}	ND
Phenanthrene	ND	ND	.003^{J}	ND
Fluoranthene	ND	ND	.003^{J}	ND
Pyrene	ND	ND	.002^{J}	ND
Benzo(a)anthracene	ND	ND	.001^{J}	ND

ND Not Detected
J Estimated Concentration due to TCL less than CRQL, or TCL with QA/QC out of control limits

2.4 POTENTIAL ALTERNATE SOURCES

There are three RCRA facilities located within the 4-mile radius of the facility (Ref. 19). No CERCLA or National Priorities List (NPL) facilities were identified within a 5-mile radius (Ref. 18; Ref. 26; Ref. 29).

2.5 REGULATORY STATUS/ACTIVITIES

Between February 1981 and September 1985, the ADPC&E cited Cabot Landfill for numerous violations, including unsatisfactory final cover; leachate observed at the site; leachate entering a water course; improper handling of special waste; operation did not correspond with engineering plans; access not limited to operating hours; unsatisfactory access roads; evidence of open burning; waste not confined to manageable areas; improper spreading of waste; improper compacting of waste; unsatisfactory daily cover; unsatisfactory intermediate cover; improper drainage; unapproved salvaging of wastes; permit not posted at site; accepting unapproved wastes; unsatisfactory litter control; inadequate records; and dumping waste into water (Ref. 34, pp. 1 - 14). The landfill was scheduled for final closure on September 15, 1987 by the ADPC&E (Ref. 40). A potential hazardous waste site identification, EPA Form 2070-8, was completed for this facility on September 6, 1990 (Ref. 15). A PA report was prepared by E&E for the EPA under TDD Number F06-9009-14, on October 31, 1991 (Ref. 1, p. 3).

3.0 ANALYTICAL RESULTS

3.1 PREVIOUS ANALYTICAL RESULTS

There were no analytical results within the site files that were reviewed by the previous FIT Task Manager.

3.2 SAMPLING METHODOLOGY

All field activities were conducted in accordance with FIT Sampling Standard Operating Procedures. Sampling occurred on March 5, 1991. The sampling team consisted of Michael Watson, Team Leader; Lana Robinson, Site Safety Officer; and team members, Lonnie Gilley, Greg Straughn, and Kurt Soutendijk of E&E. The sampling team was accompanied by Andy Dedman, Public Works Supervisor, City of Cabot, Arkansas.

Seven soil, seven surface water and four drinking water samples were collected. Samples were analyzed using Routine Analytical Services (RAS) for full Target Compound List (TCL) and Target Analyte List (TAL) compounds and cyanide. The sampling locations and rationales are depicted in Figure 3 and Table 3.

Soil and surface water samples were shipped for overnight delivery via Federal Express to the appropriate Contract Laboratories Program (CLP) laboratories. Drinking water samples were shipped to the EPA Laboratory in Houston, Texas.

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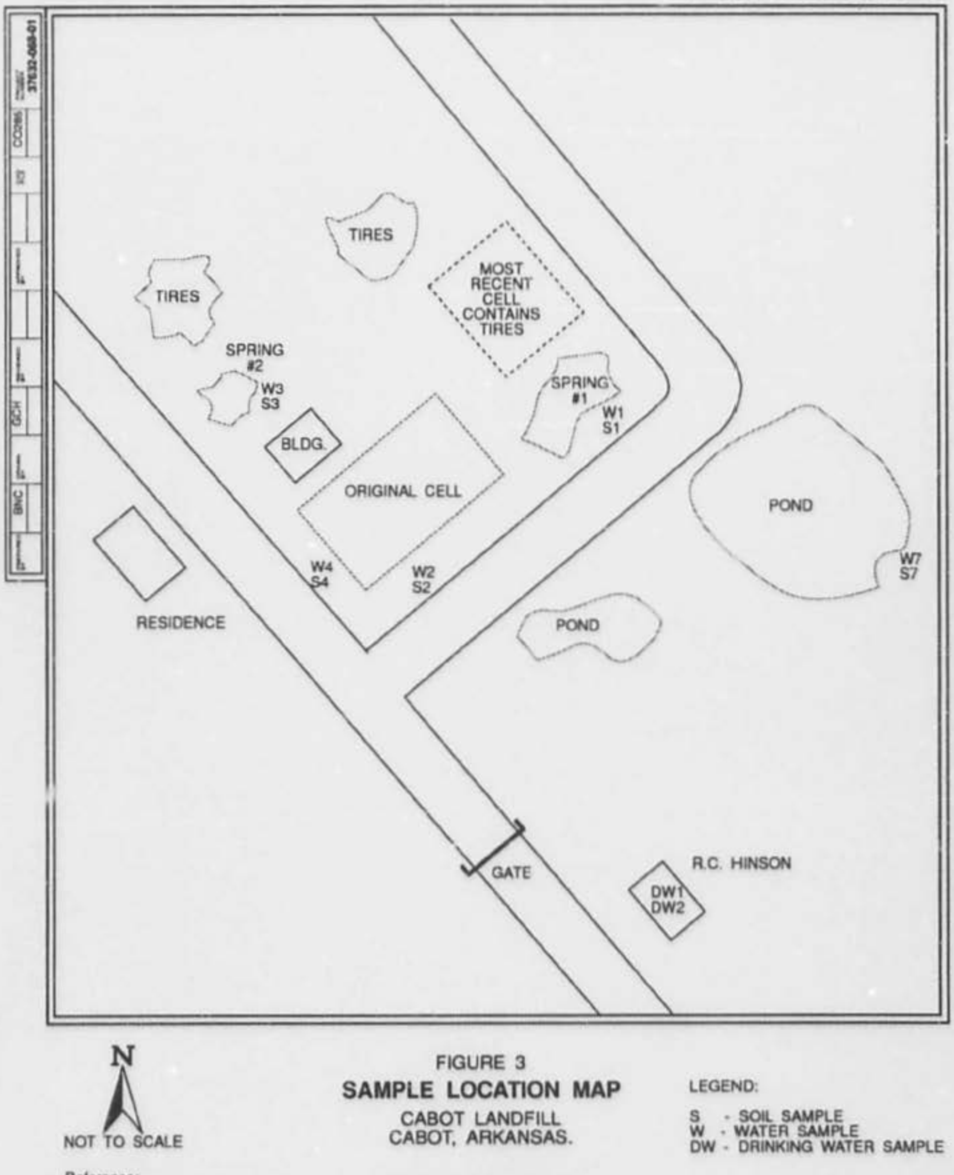

FIGURE 3
SAMPLE LOCATION MAP
CABOT LANDFILL
CABOT, ARKANSAS.

CERCLIS #ARD983269275

LEGEND:
S - SOIL SAMPLE
W - WATER SAMPLE
DW - DRINKING WATER SAMPLE

Reference:
Ecology & Environment
FIT Site Investigation Workplan

3.3 SSI ANALYTICAL RESULTS

Source Soil Samples

Inorganic analysis of the soil samples from Spring No. 1 (S-01 and S-05) and Spring No. 2 (S-03) indicated the presence of high concentrations of inorganic constituents; however, due to high background concentrations (S-06), only the following compounds were detected at concentrations greater than three times background: copper, calcium and magnesium in Sample S-01; calcium in Sample S-05; and copper, cyanide, calcium and iron in Sample S-03 (Table 1) (Appendix A).

Organic analysis of the soil samples from Spring No. 1 (S-01 and S-05) and Spring No. 2 (S-03) indicated the presence of numerous organic constituents. The following compounds were detected at concentrations greater than three times background. Naphthalene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)fluoranthene, and indeno(1,2,3-cd)pyrene were detected in Sample S-03 and chlorobenzene was detected in Samples S-01 and S-05 (Table 1) (Appendix A). Methylene chloride, numerous phthalates and acetone were also detected in the samples; however, they are common laboratory contaminants and the presence of these compounds in the samples are suspect. All concentrations of organic constituents are considered estimates due to the fact that concentrations are above Instrument Detection Limits (IDL) but below Contract Required Quantitation Limits (CRQL).

Source Water Samples

Inorganic analysis of the water samples from Spring No. 1 (W-01 and W-05) and Spring No. 2 (W-03) indicated the presence of inorganic constituents; however, this may be due in part to regional, elemental concentrations in both soils and water (Table 2). No background levels are required for source samples; however, due to the high concentrations of inorganic constituents in native soils and in the background sample, the water samples were compared to the sample taken from the on-site stock pond (W-07). The following compounds were detected greater than three times background: iron and magnesium in Samples W-01 and W-05 from Spring No. 1, and iron in Sample W-03 taken from Spring No. 2.

Organic analysis of the water from Spring No. 1 (W-01 and W-05) and Spring No. 2 (W-03) indicated the presence of numerous organic constituents. The following compounds were detected: carbon disulfide and 1-1 dichloroethane in Samples W-01 and W-05; and benzene, phenanthrene, fluoranthene, pyrene, and benzo(a)anthracene in Sample W-03 (Table 2) (Appendix A). Methylene chloride, numerous phthalates and acetone were also detected in the samples; however, they are common laboratory contaminants and the presence of these compounds in the samples is suspect. All concentrations of organic constituents are considered estimates due to the fact that reported concentrations are above IDL but below CRQL.

Stock Pond

Two samples (S-07 and W-07) were collected from the on-site stock pond to determine if hazardous constituents in the landfill leachate were migrating to the pond. Analysis of the sediments from the pond revealed only the presence of cyanide at low concentrations in the pond. Cyanide was also present in the soil from Spring No. 2; however, review of analytical data revealed the presence of cyanide in water samples as a possible laboratory contaminant.

Ground Water Pathway Samples

Four ground water samples were collected to determine if potential contaminants from the landfill were impacting ground water (Table 4). A sample and a duplicate were collected from the well belonging to [redacted] (DW-01 and DW-02). Duplicate results were within Quality Assurance/Quality Control (QA/QC) guidelines of each other. A background sample was taken from the Andy Dedman well (DW-03). A trip blank (DW-04) was also collected. Review of the analytical data indicated the presence of metals in Samples DW-01, DW-02 and the Trip Blank. No inorganic constituents were detected in the background sample (DW-03). No organic constituents were detected in any of the ground water samples. Due to the regional levels of inorganic constituents, it is unlikely that the background groundwater sample is devoid of detectable inorganics. It is also unlikely that a trip blank consisting of deionized water would have high levels of inorganic constituents. A possible explanation for this discrepancy could be that the background and trip blank samples were inadvertently switched in the field or the laboratory. Due to the limited amount of available documentation, it is impossible to determine if this error was a result of field activities or laboratory activities. An observed release to ground water cannot be documented either by using DW-04 as the background sample, because residential well sample concentrations are not greater than three times the background sample, or by using DW-03 as the background sample, due to possible blank contamination in the residential well samples.

Surface Water Overland Flow Samples

Five samples were collected from on-site drainage pathways to determine if contaminants from the landfill were migrating along the overland flow portion of the surface water pathway. Soil and surface water samples were collected from the drainage ditches where the leachate from the springs flowed and surface water runoff from the landfill flowed. Two samples (S-02 and W-02) were collected along the west drainage path that receives the leachate from Spring No. 1, and two samples (S-04 and W-04) were collected along the south drainage path that receives leachate from Spring No. 2 (Table 5).

Numerous organic and inorganic constituents were detected in the soil samples collected from the drainage streams. High concentrations of inorganic constituents were detected in the background soil sample, S-06 (Table 5) (Appendix A). The following compounds were detected at concentrations greater than three times background in Sample S-02: calcium, manganese, benzoic acid, fluoranthene and pyrene. Calcium, iron, manganese, zinc, chlorobenzene, cyanide, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(a)fluoranthene and alpha chlordane were detected at three times background in Sample S-04.

No significant concentrations of organic and inorganic constituents were detected in the surface water samples. Methylene chloride, numerous phthalates and acetone were also detected in the samples; however, they are common laboratory contaminants and the presence of these compounds in the samples is suspect. All concentrations of organic constituents are considered estimates due to the fact that reported concentrations are above IDL but below CRQL.

4.0 PATHWAY ASSESSMENT

This section characterizes the environmental pathways and associated targets of potential contaminant migration from the facility.

TABLE 3

SAMPLE LOCATIONS AND RATIONALE

Station Number	Sample Description and Rationale
W1	Spring No. 1. Rationale: To characterize soluble contaminants at source.
W2	Stream No. 1. Rationale: To identify any soluble contaminants that are capable of migration from the source. Downgradient.
W3	Spring No. 2. Rationale: To characterize soluble contaminants at source.
W4	Stream No. 2. Rationale: To identify any soluble contaminants that are capable of migration from the source. Downgradient.
W5	Spring No. 1. Rationale: Duplicate of Spring No. 1.
W6	Trip Blank. Rationale: QA/QC control.
W7	Stock Pond. Rationale: To determine if the pond has been subjected to leachate contamination.
S1	Spring No. 1. Rationale: At source. To characterize the source.
S2	Stream No. 1. Rationale: Downgradient. To determine if there has been any migration of contaminants from the source.
S3	Spring No. 2. Rationale: At source. To characterize the source.
S4	Stream No. 2. Rationale: Downgradient. To determine if there has been any migration of contaminants from the source.
S5	Duplicate of S1, located in Spring No. 1. Rationale: Duplicate of S1.
S6	Background. Rationale: To determine regional background concentration.

TABLE 3

SAMPLE LOCATIONS AND RATIONALE

(Continued)

Station Number	Sample Description and Rationale
S7	Stock Pond. Rationale: To determine if the pond has been subjected to leachate contamination.
DW1	Domestic Well. Rationale: [redacted]. To determine whether contamination exists at a drinking water target.
DW2	Domestic Well. Rationale: Duplicate of DW1.
DW3	Domestic Well. Rationale: [redacted] well. To be used as a background sample.
DW4	Trip Blank. Rationale: QA/QC control.

S - Soil Sample
W - Water Sample
DW - Drinking Water Sample

TABLE 4

GROUND WATER PATHWAY SAMPLES: ANALYTICAL RESULTS

(All Concentrations are Expressed in Parts Per Million)

Contaminant	DW-03 (Background)	DW-04 (Trip Blank)	DW-01 (R.C. Hinson)	DW-02 (R.C. Hinson, Duplicate)
Aluminum	ND	ND	.28900	.27900
Barium	ND	.025	.11400	.11400
Calcium	ND	5.78	8.94	8.95
Magnesium	ND	8.72	6.75	6.76
Manganese	ND	.647	.21700	.21700
Zinc	ND	.074	.06100	.059
Iron	ND	1.97	.571	.5920

ND Not Detected

TABLE 5

SURFACE WATER PATHWAY SAMPLES: ANALYTICAL RESULTS
(All Concentrations are Expressed in Parts Per Million)

Contaminant	Water		Soil/Sediment		
	W-02 (Stream No. 1)	W-04 (Stream No. 2)	S-06 (Background)	S-02 (Stream No. 1)	S-04 (Stream No. 2)
Calcium	14.20	45.40	264	2,290	2,210
Iron	.13200^J	8.46^J	31,300	14,500	243,000
Magnesium	5.87	12.80	355	672	821
Manganese	.1320	6.47	674	2,040	2,480
Chlorobenzene	ND	.001^J	ND	ND	.004^J
Zinc	ND	ND	24.70	62.30	96.90
Cyanide	ND	ND	ND	ND	1.6
Benzoic Acid	ND	ND	ND	1.5^J	ND
Phenanthrene	ND	ND	ND	ND	.017^J
Fluoranthene	ND	ND	ND	.068^J	.24^J
Pyrene	ND	ND	ND	.080^J	.24^J
Benzo(a)anthracene	ND	ND	ND	ND	.012^J
Chrysene	ND	ND	ND	ND	.013^J
Benzo(b)fluoranthene	ND	ND	ND	ND	.011^J
Alpha Chlordane	ND	ND	ND	ND	.015^J

ND Not Detected
J Estimated concentration due to TCL less than CRQL, or TCL with QA/QC out of control limits

4.1 GROUND WATER PATHWAY

4.1.1 Ground Water Characteristics

The site is physiographically situated in a divisional area of the two major provinces of Arkansas; the Interior Highland Province and the Coastal Plain Province. The transition zone between the highlands and the plains is called the Fall Line (Ref. 9, p. 3). The principal hydrologic unit considered to underlie the site is the undifferentiated Tertiary deposits (Ref. 9, pp. 5 and 6, Plate 1). The undifferentiated Tertiary deposits are comprised of sandy clays with channel fillings of clean sand (Ref. 9, p. 7). A well log identified within a 1-mile radius of the facility indicates that there is a surficial strata of clay approximately 80 feet in depth (Ref. 36, p.1). Depth to ground water is approximately 25 feet, and the well produces approximately 50 gallons per hour. Soil borings taken from on-site indicate that the first 10 feet of soil underlying the facility is composed of clay with seams of shale (Ref. 5, p. 3). The Midway Formation is the predominant unit underlying the undifferentiated Tertiary deposits (Ref. 8, Figure 3.0-1; Ref. 9, pp. 8, 10). It is comprised predominantly of clay and generally produces no water and is considered a clay confining layer in the area of the facility (Ref. 8, Figure 3.0-1). The net precipitation for the Cabot to North Little Rock, Arkansas area is 21.04 inches (Ref. 33).

4.1.2 Ground Water Receptors

There are no municipal or public supply wells located within a 4-mile radius of the facility (Ref. 11; Ref. 20; Ref. 21; Ref. 23; Ref. 24; Ref. 25). The City of Cabot supplies water to the residents of Cabot, Mountain Springs, and some residents south of Cabot. The City of Cabot receives a portion of its water from two municipal wells located outside the target distance limit (Ref. 21). The City of Austin purchases water from the City of Ward and serves residents of Austin and adjacent rural areas (Ref. 20). The City of Ward supplies water to the residents of Ward from municipal owned wells, the City of Ward wells are located outside the target distance limit (Ref. 23). There are three rural water districts serving residents within the Four-mile Creek target distance limit: Grand Prairie, Bayou II and Highway 319 Water Supply Company (Ref. 11; Ref. 24). These rural water districts purchase their water from other water companies or have wells outside the target distance limit (Ref. 24). Not all residents within the 4-mile radius are on a public supply, according to Mr. Guthrie, City of Cabot Water Department; there are at least 100 homes within the target distance limit not supplied by a municipal or public source (Ref. 21; Ref. 24; Ref. 25). A well survey conducted by the FIT Task Manager identified one well within a ¼-mile radius of the facility; however, the well is not on a public water supply (Ref. 36). The person per household figure for Lonoke County is 2.83 (Ref. 28). Ground water is used for irrigation within a 4-mile radius of the facility (Ref. 24). There are no Wellhead Protection areas located within the 4-mile radius (Ref. 38).

4.2 SURFACE WATER PATHWAY

4.2.1 Surface Water Characteristics

The site is located along the topographic ridge of a small valley (Ref. 11). On-site drainage follows topography and flows north/northeast towards Four-mile Creek (Ref. 3, p.1). There are two leachate springs located at the facility. The leachate springs follow the on-site drainage path and empty into Four-mile Creek (Ref. 11). Four-mile Creek becomes perennial approximately 3,000 feet from the facility (Ref. 11). The Probable Point-of-Entry (PPE) is the point where site drainage enters the perennial portion of Four-mile Creek. Four-mile Creek meanders approximately 5 miles before emptying into Cypress Bayou (Ref. 11). The end of the 15-mile target distance limit lies within Cypress Bayou (Ref. 11). The flow rates of Four-mile Creek and Cypress Bayou are not known; however, both surface water bodies appear on a greater than 5 cubic feet per second (c.f.s.) map for the State of Arkansas (Ref. 30; Ref. 31). Four-mile Creek will be considered a minimal stream with a c.f.s. of greater than 10 and less than 100, and Cypress Bayou will be considered a moderate stream with c.f.s. of greater than 100 and less than 1,000.

On-site soils . e the Leadvale silt loams with 3 - 8% slopes. The Leadvale series consist of deep, moderately well drained, slowly permeable, nearly level to gently sloping soils that formed in loamy materials (Ref. 41, p. 61). The two year, 24-hour rainfall average for the Cabot area is 4.0 inches (Ref. 14). It is not known if the City of Cabot Landfill lies within a floodplain; however, the 7.5 Minute Topographic Quadrangle in which the site is located is listed as a frequently flooded area in Arkansas (Ref. 27). The upgradient drainage area is estimated to be the total area of the site's 118 acres (Ref. 11; Ref. 42).

4.2.2 Surface Water Receptors

Four-mile Creek and Cypress Bayou are not used for a municipal water supply within the 15-mile downstream in-water segment (Ref. 22). Cypress Bayou and Four-mile Creek are warm water fisheries. Surface water is used for irrigation of soybean and rice production within the 15-mile in-water segment (Ref. 22). There are no known sensitive environments other than wetlands located within the target distance limit. There is approximately one mile of wetland frontage along Cypress Bayou (Ref. 11; Ref. 22; Ref. 32).

4.3 GROUND WATER RELEASE TO SURFACE WATER PATHWAY

A potential exists for ground water release to surface water via underground streams and springs discharging to Four-mile Creek. Four-mile Creek is perennial within a 1-mile radius of the facility (Ref. 11). Two on-site leachate springs discharge to drainage ditches that empty into the intermittent portion of Four-mile Creek (Figure 2). Chemical analysis of these leachate springs revealed the presence of low-level organic contaminants in the discharge (Tables 1 and 2) (Appendix A).

4.4 SOIL EXPOSURE PATHWAY

Chemical analysis of leachate from the landfill indicated the presence of hazardous constituents in the landfill (Tables 1 and 2) (Appendix A). The landfill area is approximately 14.9 acres. The landfill has been closed. At the time of closure the landfill was covered with a 2 feet thick compacted clay cap and 4 inches of top soil. The top soil was seeded at the time of closure and is heavily vegetated (Ref. 1, p. 1; Ref. 45). The FIT Task Manager observed problems with the cover's integrity during the on-site reconnaissance inspection. The facility is located within a rural area and the landfill is not fenced (Ref. 2, p. 1). A gate blocks the landfill entrance road (Ref. 5, p. 2).

4.4.1 Resident Threat Receptors

The landfill is inactive, there are no on-site residents or workers (Ref. 1, p. 1). The nearest residence is Mr. Hinson's, which is located approximately 100 feet from the facility boundary (Ref. 11). There are no known sensitive environments or resources located on an area of observed contamination (Ref. 22; Ref. 32).

4.4.2 Nearby Threat Receptors

The nearest residence is [redacted], which is located approximately 100 feet from the facility boundary (Ref. 11). The populations within the 0 to ¼; ¼ to ½; and ½ to 1-mile radii are 20, 127, and 297, respectively (Ref. 11; Ref. 28). The population living within the various target distance radii was calculated by conducting a house count on a 7.5 Minute Series Topographic Map (Ref. 11).

4.5 AIR PATHWAY

4.5.1 Air Pathway Characteristics

The landfill is covered; however, the depth of the cover is not known. The landfill is heavily vegetated (Ref. 1, p. 2). The FIT Task Manager observed problems with the cover bridging during the on-site reconnaissance inspection (Ref. 46). Volatile and semi-volatile contaminants have been detected in leachate and leachate-stained soil at the facility (Tables 1 and 2) (Appendix A). A potential exists for gaseous migration of volatile and semi-volatile compounds via the Air Pathway.

4.5.2 Air Receptors

The nearest individual or regularly occupied building is the home of Mr. Hinson, located approximately 100 feet from the landfill boundary (Ref. 11). The populations within the 0 to ¼; ¼ to ½; ½ to 1; 1 to 2; 2 to 3; and 3 to 4-mile radii (estimated using a 7.5 Minute Topographic Map and the GEMS database) are 20; 127; 297; 2,266; 3,057; and 1,532, respectively (Ref. 11; Ref. 28; Ref. 37). There are no known sensitive environments within a 4-mile radius of the facility (Ref. 11; Ref. 22; Ref. 38). There is no known resource use of land within a ½-mile radius of the facility (Ref. 3, p. 1).

5.0 SUMMARY

The City of Cabot Landfill is an inactive sanitary landfill. The landfill was closed sometime in 1987. Chemical analysis of leachate from the landfill indicated the presence of hazardous constituents leaching from the landfill.

City and rural water districts supply water to the majority of residents within the target distance limit; however, there is documentation to suggest that there are areas within the 4-mile radius that rely on domestic wells for their potable water supply. There are no municipal or public supply wells within the 4-mile target distance limit. The nearest domestic well was sampled. The data indicates that no release to the residential well has occurred.

There are two leachate springs that discharge into on-site drainage ditches. Samples taken from the on-site leachate springs contained low levels of organic compounds, commonly associated with petroleum products such as tires.

Samples taken from on-site drainage ditches indicate low-levels of hazardous constituents migrating along the overland flow route of the Surface Water Pathway. No samples were collected from the perennial portion of Four-mile Creek.

The facility is inactive and there are no on-site residents or workers. The landfill is located in a predominantly rural area. The nearest residence is the home of [redacted] located 400 feet from the landfill boundary. There is a potential for gaseous release of contaminants from the landfill due to the detection of Volatile Organic Compounds (VOCs) in the leachate, and the lack of a maintained cover.

SSI DOCUMENTATION LOG SHEET

SITE:	Cabot Landfill
IDENTIFICATION NUMBER:	ARD983269275
CITY:	Cabot
STATE:	Arkansas

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
1	Kurt Soutendijk, FIT Chemist, Ecology and Environment, Inc., "Preliminary Assessment Report for Cabot Landfill." October 31, 1990.
2	Application for Approval of Sanitary Landfill Site. Prepared by the City of Cabot, Arkansas. December 6, 1977.
3	Sanitary Landfill Study for Cabot, Arkansas.
4	Letter. Operation Permit, City of Cabot. From: Ray Hightower, Chief, Solid Waste Control Division, Arkansas Department of Pollution Control and Ecology. To: Willie P. Ray, Mayor, City of Cabot. July 28, 1975.
5	Application for Solid Waste Disposal Permit, Prepared by the City of Cabot, Arkansas. December 5, 1981.
6	Permit Application Summary. Prepared by the Arkansas Department of Pollution Control and Ecology. March 16, 1981.
7	Record of Communication. Cabot Landfill. From: Michael Watson and Julie L. Koke, FIT, Ecology and Environment, Inc. To: Andy Dedman, Public Works Supervisor, City of Cabot, Arkansas. January 25, 1991. ARD983269275.
8	C.T. Bryant, A.H. Ludwig, and E.E. Morris, U.S. Geological Survey, "Ground Water Problems in Arkansas." Water Resources Investigations Report 85-4010. 1985.
9	Harlan B. Counts, U.S. Geological Survey. "Ground Water Resources of Parts of Lonoke, Prairie and White Counties, Arkansas." Water Resources Circular No. 5. 1957.
10	Hansford T. Shacklette and Josephine G. Boerngen. "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States." U.S. Geological Survey Professional Paper No. 1270. 1984.

SSI DOCUMENTATION LOG SHEET

Continued

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
11	U.S. Geological Survey, 7.5 Minute Topographic Maps of Arkansas: Mountain Springs, 1981; Beebee, 1981; Cabot, 1975; and Oak Grove, 1982.
12	Record of Communication. Cabot Landfill. From: Kurt Soutendijk, FIT Chemist, Ecology and Environment, Inc. To: Rodney Cabot, Cabot Water Supply. October 15, 1990. ARD983269275.
13	Record of Communication. Public Usage of Four-Mile Creek. From: Michael Watson. FIT, Ecology and Environment, Inc. To: Andy Dedman, City of Cabot. June 6, 1991. ARD983269275.
14	Herschfield, David M., 1961, Rainfall Frequency Atlas of the United States. U.S. Weather Bureau Technical Paper No. 40.
15	United States Potential Hazardous Waste Site Identification for Cabot Landfill, Cabot, Lonoke County, Arkansas. Prepared by Bart Canellas. September 6, 1990. ARD983269275.
16	Record of Communication. Old Cabot Landfill. From: Bart Canellas, EPA Region 6. To: File. October 11, 1990. ARD983269275.
17	Record of Communication. Phone call from Wilson Tolfree (ADPC&E) regarding Cabot, Arkansas Landfill. From: Garrett Bondy, EPA Region 6. To: Davis, Becker and Parr. August 29, 1990. ARD983269275.
18	U.S. EPA Region 6, CERCLIS Listing by State and County. December 20, 1991.
19	U.S. EPA Region 6, RCRA Notifier's List by State and County. December 20, 1991.
20	Record of Communication. City of Austin Water Supply. From: Brenda Nixon Cook, Task Manager, ICF Technology, Inc. To: Patricia Morris, City of Austin. September 30, 1992. ARD983269275.
21	Record of Communication. City of Cabot. From: Brenda Nixon Cook, Task Manager, ICF Technology, Inc. To: Rodney Guthrie, City of Cabot. September 28, 1992. ARD983269275.
22	Record of Communication. Usage of 4-mile Creek and Cypress Bayou. From: Brenda Nixon Cook, Task Manager, ICF Technology, Inc. To: Joe Hughes, Technician, U.S. Soil Conservation Service. September 30, 1992. ARD983269275.

4 1 5

SSI DOCUMENTATION LOG SHEET

Continued

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
23	Record of Communication. City of Ward Water Supply. From: Brenda Nixon Cook, Task Manager, ICF Technology, Inc. To: Joyce Feltner, City of Ward. September 29, 1992. ARD983269275.
24	Record of Communication. Water Supply of Grand Prairie. From: Brenda Nixon Cook, Task Manager, ICF Technology, Inc. To: Sandra Moore, Grand Prairie Water Company. September 29, 1992. ARD983269275.
25	Record of Communication. Water Supply of Bayou II and 319 Water Supply Company. From: Brenda Nixon Cook, Task Manager, ICF Technology, Inc. To: Shirley Healey, Utility Management Company. September 29, 1992. ARD983269275.
26	United States Environmental Protection Agency. "National Priorities List Sites: Arkansas." EPA/540/8-91/020. September 1991.
27	U.S. Department of the Interior. "Current Water Resources Activities in Arkansas, 1986-1987." Open-file Report 88-348.
28	U.S. Department of Commerce, Bureau of the Census. "Estimates of Households, four Counties: July 1, 1985." Current Population Report, Special Studies, Series P-23, No. 156.
29	State of Arkansas, Department of Pollution Control and Ecology. Regulation Establishing Water Quality Standards for Surface Water of the State of Arkansas." January 1988.
30	U.S. Geological Survey. "Water Resources Data, Arkansas Water Year 1989." U.S. Geological Survey Water-Data Report AR-894.
31	"5 C.F.S. Streams in Arkansas," Prepared by Arkansas State Highway and Transportation Department, Environmental Division.
32	Letter. Endangered Species for the States of Arkansas and Louisiana. From: Dennis B. Jordan, Field Supervisor, Endangered Species Field Office, U.S. Fish and Wildlife Service. To: Dr. Noel Lewandos, Ecology and Environment, Inc. May 14, 1985.
33	Letter. Net Precipitation Values. From: Andrew M. Platt, Group Leader, Hazardous Waste Systems, MITRE. To: Ms. Lucy Sibold, U.S. EPA. May 26, 1988.
34	Arkansas Department of Pollution Control and Ecology. Sanitary Landfill Evaluation Checklists for the City of Cabot Landfill, 1981-1985.

SSI DOCUMENTATION LOG SHEET **Continued**

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
35	Letter. Soil Investigation of Cabot Landfill. From: Richard T. Fielder, Soil Scientist, Soil Conservation Service. To: Mayor, City of Cabot. July 12, 1977.
36	Well Logs. State of Arkansas Report of Water Well Construction near Cabot Landfill.
37	U.S. Environmental Protection Agency, Geographical Exposure Modeling Systems (GEMS) Database, compiled from U.S. Census Bureau 1980 data. Accessed September 28, 1992.
38	Record of Communication. Arkansas Wellhead Protection Program: Plainview, Arkansas. From: Steve Cowan, FIT Biologist, ICF Technology, Inc. To: Bobby Makin, Assistant Director Engineering, Arkansas Department of Health. January 2, 1991.
39	Memorandum. Drums of Hazardous Materials at Cabot Sanitary Landfill. From: Mike Bates, Hazardous Waste Inspector, TSB. To: Doice Hughes, Inspector Supervisor-Hazardous Waste, TSB. February 24, 1981.
40	Letter. Cabot Landfill Closure. From: Jim Beardon, R.S. Coordinator, Solid Waste Division, ADPC&E. To: N.E. Smith, Mayor, City of Cabot. January 6, 1987.
41	U.S. Department of Agriculture, Soil Conservation Service. "Soil Survey of Lonoke and Prairie Counties, Arkansas." October 1981.
42	Arkansas Assessment Coordination Division, City of Cabot Property Plot.
43	On-Site Reconnaissance Log Book for Cabot Landfill. Prepared by Michael Watson, Ecology and Environment, Inc. for EPA Region 6. January 25, 1991. ARD983269275.
44	Michael Watson, FIT Chemist, Ecology and Environment, Inc., "Screening Site Inspection Work Plan for Cabot Landfill." February 14, 1991.
45	Record of Communication. City of Cabot Landfill. From: Thomas Ritchie, Geologist, ICF Technology, Inc. To: Andy Dedmon, Public Works Supervisor, City of Cabot , Arkansas. March 16, 1993. ARD983269275.

SSI DOCUMENTATION LOG SHEET

Continued

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
46	Record of Communication. Conditions at Cabot Landfill - FIT Field Reconnaissance Observations. From: Brenda Nixon Cook, Task manager, ICF Technology, Inc. To: Mike Watson, Chemist, Ecology and Environment. July 19, 1993. ARD983269275.

APPENDIX A

Chemical Data Summary

SITE NAME AND CODE: CABOT LANDFILL ARD983269275
CASE NUMBER: 15008
Page 1 of 4
CONCENTRATIONS IN PARTS PER MILLION (mg/kg)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

		Traffic Number	FR572/MFN154	FR573/MFN155	FR574/MFN156	FR575/MFN157	FR576/MFN158	FR577/MFN159	FR578/MFN160
		Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Percent Moisture	25/30.1	48/44.5	38/36.9	41/47.1	30/32	18/15.4	14/17.7
		Location And/Or Sample Description	S-01 SPRING # 1	S-02 STREAM # 1	S-03 SPRING # 2	S-04 STREAM # 2	S-05 NORTH POND, DUPLICATE OF S-01	S-06 BACKGROUND SAMPLE	S-07, STOCK POND
Compound Name	CAS/SCAN	CLASS							
ALUMINUM	7429-90-5	INO	1450.00	5340.00	9410.00	5940.00	12500.00	8210.00	7340.00
ARSENIC	7440-38-2	INO	8.20	4.10	10.00	12.20	10.30	12.10	9.00
BARIUM	7440-39-3	INO	71.70	115.00	67.80	164.00	65.20	59.40	64.10
BERYLLIUM	7440-41-7	INO	0.67	0.84	1.20	0.40	1.10	1.10	0.68
CADMIUM	7440-43-9	INO				2.20			
CALCIUM	7440-47-2	INO	715.00	2290.00	1450.00	2210.00	790.00	264.00	1150.00
CHROMIUM	7440-47-3	INO	21.90 J	9.90 J	21.20 J	10.70 J	24.80 J	44.30 J	25.90 J
COBALT	7440-48-4	INO	8.20	25.50	10.30	40.70	11.50	12.00	10.20
COPPER	7440-50-8	INO	18.70	12.70	26.10	6.30 B	8.20	6.10	4.90
IRON	7439-89-6	INO	32500.00	14500.00	94000.00	243000.00	40400.00	31300.00	22800.00
LEAD	7439-92-1	INO	14.00	16.30	16.50	16.20	19.60	25.30	13.20
MAGNESIUM	7439-95-4	INO	1090.00	672.00	775.00	821.00	671.00	355.00	638.00
MANGANESE	7439-96-5	INO	205.00	2040.00	553.00	2480.00	399.00	674.00	471.00
NICKEL	7440-02-0	INO	10.30	12.30	18.30	15.70	6.80	7.00	6.00
POTASSIUM	7440-09-7	INO	735.00	512.00	849.00	596.00	597.00	290.00	419.00
SELENIUM	7782-49-2	INO	0.60 J	0.76 J				0.87	
SILVER	7440-22-4	INO				3.40			
SODIUM	7440-23-5	INO	164.00	386.00	104.00	96.30	86.80		
THALLIUM	7440-28-0	INO		0.36	0.51			0.25	
VANADIUM	7440-62-2	INO	31.00	13.10	23.40	13.70	30.10	38.90	24.20
ZINC	7440-66-6	INO	33.30	62.30	91.60	96.90	32.20	24.70	24.10
CYANIDE	--------	INO			2.00	1.60			0.20
METHYLENE CHLORIDE	75-09-2	VOA/1	0.02700 B		0.02100 B			0.01900 B	0.01900 B
ACETONE	67-64-1	VOA/1	0.03600		0.09200	0.03200	0.14000		
CHLOROBENZENE	108-90-7	VOA/1	0.00300 J			0.00400 J	0.00700 J		
XYLENE (TOTAL)	1330-20-7	VOA/1					0.02000		
BENZOIC ACID	65-85-0	ABN/1		1.50000 J					
NAPHTHALENE	91-20-3	ABN/1			0.04300 J				
PHENANTHRENE	85-01-8	ABN/1			0.39000 J	0.17000 J			
ANTHRACENE	120-12-7	ABN/1			0.09100 J				
FLUORANTHENE	206-44-0	ABN/1		0.06800 J	0.48000 J	0.24000 J			
PYRENE	129-00-0	ABN/1		0.08000 J	0.46000 J	0.24000 J			
BENZO(A)ANTHRACENE	56-55-3	ABN/1			0.19000 J	0.12000 J			
CHRYSENE	218-01-9	ABN/1			0.21000 J	0.13000 J			
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	ABN/1	0.11000 J	0.24000 J	0.13000 J	0.09600 J			
BENZO(B)FLUORANTHENE	205-99-2	ABN/1			0.15000 J	0.11000 J			
BENZO(K)FLUORANTHENE	207-08-9	ABN/1			0.17000 J				
BENZO(A)PYRENE	50-32-8	ABN/1			0.17000 J				
INDENO(1,2,3-CD)PYRENE	193-39-5	ABN/1			0.12000 J				
ALPHA-CHLORDANE	5103-71-9	PES/1				0.01500 J			

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB INO - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

IF THE PAGE FILMED IS NOT AS LEGIBLE AS THIS LABEL, IT IS DUE TO THE QUALITY OF THE ORIGINAL.

Chemical Data Summary

SITE NAME AND CODE: CABOT LANDFILL ARD983269275
CASE NUMBER: 16008

CONCENTRATIONS IN PARTS PER MILLION (mg/kg)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

		Traffic Number	FP572/MFN154	FP573/MFN155	FP574/MFN156	FP575/MFN157	FP576/MFN158	FP577/MFN159	FP578/MFN160
		Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Percent Moisture	29/30.1	48/44.5	38/36.9	41/47.1	30/32	18/15.4	14/17.7
		Location And/Or Sample Description	S-01 SPRING # 1	S-02 STREAM # 1	S-03 SPRING # 2	S-04 STREAM # 2	S-05 NORTH POND, DUPLICATE OF S-01	S-06 BACKGROUND SAMPLE	S-07, STOCK POND
Compound Name	CAS/SCAN	CLASS							
GAMMA-CHLORDANE	5103-74-2	PES/1				0.00650 J			
CARBON DIOXIDE	3.32	VOA/2	1.00000 BJ						
CARBON DIOXIDE	3.36	VOA/2		0.90000 BJ					
CARBON DIOXIDE	3.36	VOA/2			0.90000 BJ				
CARBON DIOXIDE	3.36	VOA/2				0.08000 BJ			
CARBON DIOXIDE	3.36	VOA/2					1.00000 BJ		
CARBON DIOXIDE	3.32	VOA/2						0.02000 BJ	
CARBON DIOXIDE	3.37	VOA/2							0.10000 BJ
UNKNOWN	4.92	ABN/2	6.00000 J						
UNKNOWN	4.96	ABN/2	0.60000 J						
ALDOL CONDENSATION PRODUCT	6.42	ABN/2	40.00000 J						
UNKNOWN	8.13	ABN/2	1.00000 BJ						
UNKNOWN	42.88	ABN/2	0.60000 J						
UNKNOWN	44.57	ABN/2	0.70000 J						
UNKNOWN	46.13	ABN/2	0.60000 J						
UNSPECIFIED ALKANE	47.41	ABN/2	0.70000 J						
UNKNOWN	47.61	ABN/2	0.40000 J						
UNSPECIFIED ALKANE	49.55	ABN/2	0.50000 J						
UNKNOWN	4.90	ABN/2		9.00000 J					
ALDOL CONDENSATION PRODUCT	6.40	ABN/2		50.00000 J					
UNKNOWN	8.11	ABN/2		1.00000 BJ					
UNKNOWN	39.03	ABN/2		1.00000 J					
UNKNOWN	42.87	ABN/2		0.90000 J					
UNKNOWN	44.55	ABN/2		1.00000 J					
UNSPECIFIED ALKANE	45.14	ABN/2		4.00000 J					
UNKNOWN	46.12	ABN/2		0.90000 J					
UNSPECIFIED ALKANE	47.40	ABN/2		4.00000 J					
UNSPECIFIED ALKANE	49.54	ABN/2		2.00000 J					
UNSPECIFIED ALKANE	50.21	ABN/2		6.00000 J					
UNSPECIFIED ALKANE	56.38	ABN/2		2.00000 J					
UNKNOWN	50.68	ABN/2		3.00000 J					
UNKNOWN	50.97	ABN/2		2.00000 J					
UNKNOWN	51.83	ABN/2		5.00000 J					
UNKNOWN	53.09	ABN/2		5.00000 J					
UNKNOWN	4.92	ABN/2			6.00000 J				
UNKNOWN	4.96	ABN/2			0.70000 J				
ALDOL CONDENSATION PRODUCT	6.40	ABN/2			40.00000 J				
UNKNOWN	8.13	ABN/2			1.00000 BJ				
UNKNOWN	36.14	ABN/2			0.70000 J				
UNSPECIFIED ALKANE	42.72	ABN/2			0.50000 J				

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB IND - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

SITE NAME AND CODE: CABOT LANDFILL ARD983269275
CASE NUMBER: 16008

CONCENTRATIONS IN PARTS PER MILLION (mg/kg)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

		Traffic Number	FP572/MFN154	FP573/MFN155	FP574/MFN156	FP575/MFN157	FP576/MFN158	FP577/MFN159	FP578/MFN160
		Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Percent Moisture	29/30.1	48/44.5	38/36.9	41/47.1	30/32	18/15.4	14/17.7
		Location And/Or Sample Description	S-01 SPRING # 1	S-02 STREAM # 1	S-03 SPRING # 2	S-04 STREAM # 2	S-05 NORTH POND, DUPLICATE OF S-01	S-06 BACKGROUND SAMPLE	S-07, STOCK POND
Compound Name	RT/SCAN	CLASS							
UNKNOWN	42.86	ABN/2			0.80000 J				
UNKNOWN	44.55	ABN/2			0.80000 J				
UNKNOWN	46.12	ABN/2			0.70000 J				
UNSPECIFIED ALKANE	47.40	ABN/2			0.70000 J				
UNKNOWN	47.60	ABN/2			0.50000 J				
UNKNOWN	49.41	ABN/2			0.50000 J				
UNKNOWN	49.74	ABN/2			0.90000 J				
UNKNOWN	50.25	ABN/2			3.00000 J				
UNKNOWN	51.82	ABN/2			0.50000 J				
UNKNOWN	52.29	ABN/2			0.60000 J				
UNKNOWN	53.07	ABN/2			0.60000 J				
UNKNOWN	4.90	ABN/2				6.00000 J			
ALDOL CONDENSATION PRODUCT	6.40	ABN/2				40.00000 J			
UNKNOWN	8.11	ABN/2				1.00000 BJ			
UNSPECIFIED ALKANE	8.41	ABN/2				0.30000 J			
UNKNOWN	41.07	ABN/2				0.40000 J			
UNKNOWN	42.72	ABN/2				0.80000 J			
UNKNOWN	42.86	ABN/2				0.70000 J			
UNSPECIFIED ALKANE	44.37	ABN/2				0.60000 J			
UNKNOWN	44.55	ABN/2				0.90000 J			
UNSPECIFIED ALKANE	45.12	ABN/2				1.00000 J			
UNKNOWN	46.11	ABN/2				0.80000 J			
UNSPECIFIED ALKANE	47.40	ABN/2				0.70000 J			
UNKNOWN	47.60	ABN/2				0.80000 J			
UNKNOWN	49.01	ABN/2				9.00000 J			
UNKNOWN	50.25	ABN/2				3.00000 J			
UNKNOWN	51.82	ABN/2				1.00000 J			
UNKNOWN	52.72	ABN/2				0.80000 J			
UNKNOWN	4.79	ABN/2					5.00000 J		
ALDOL CONDENSATION PRODUCT	6.29	ABN/2					40.00000 J		
UNKNOWN	8.01	ABN/2					1.00000 BJ		
UNKNOWN	40.97	ABN/2					0.60000 J		
UNKNOWN	42.76	ABN/2					1.00000 J		
UNKNOWN	44.44	ABN/2					2.00000 J		
UNKNOWN	46.03	ABN/2					2.00000 J		
UNKNOWN	47.51	ABN/2					1.00000 J		
UNKNOWN	48.91	ABN/2					1.00000 J		
UNKNOWN	50.25	ABN/2					0.50000 J		
UNKNOWN	4.83	ABN/2						5.00000 J	
ALDOL CONDENSATION PRODUCT	6.33	ABN/2						30.00000 J	

W

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB IND - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

IF THE PAGE FILMED IS NOT AS LEGIBLE AS THIS LABEL, IT IS DUE TO THE QUALITY OF THE ORIGINAL.

Chemical Data Summary

SITE NAME AND CODE: CABOT LANDFILL ARD983269275
CASE NUMBER: 16008

CONCENTRATIONS IN PARTS PER MILLION (mg/kg)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

		Traffic Number	FP572/MFN154	FP573/MFN155	FP574/MFN156	FP575/MFN157	FP576/MFN158	FP577/MFN159	FP578/MFN160			
		Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL			
		Percent Moisture	25/20.1	48/44.5	38/36.9	41/47.1	30/32	18/15.4	14/17.7			
		Location And/Or Sample Description	S-01 SPRING # 1	S-02 STREAM # 1	S-03 SPRING # 2	S-04 STREAM # 2	S-05 NORTH POND, DUPLICATE OF S-01	S-06 BACKGROUND SAMPLE	S-07, STOCK POND			
Compound Name	CAS/SCAN	CLASS										
UNKNOWN	6.02	ABN/2						0.80000 BJ				
UNKNOWN	8.38	ABN/2						0.80000 J				
UNKNOWN	16.23	ABN/2						0.40000 J				
UNKNOWN	17.59	ABN/2						1.00000 J				
UNKNOWN	23.44	ABN/2						0.40000 J				
UNKNOWN	40.97	ABN/2						0.50000 J				
UNKNOWN	42.75	ABN/2						1.00000 J				
UNKNOWN	44.44	ABN/2						2.00000 J				
UNKNOWN	46.02	ABN/2						2.00000 J				
UNKNOWN	47.51	ABN/2						2.00000 J				
UNKNOWN	48.91	ABN/2						0.90000 J				
UNKNOWN	50.15	ABN/2						0.70000 J				
UNKNOWN	50.26	ABN/2						0.60000 J				
UNKNOWN	51.64	ABN/2						0.50000 J				
UNKNOWN	52.90	ABN/2						2.00000 J				
UNKNOWN	4.81	ABN/2							4.00000 J			
UNKNOWN	4.85	ABN/2							0.50000 J			
ALDOL CONDENSATION PRODUCT	6.29	ABN/2							30.00000 J			
UNKNOWN	8.01	ABN/2							0.90000 BJ			
UNKNOWN	8.34	ABN/2							0.60000 J			
UNKNOWN	16.22	ABN/2							0.30000 J			
UNKNOWN	17.60	ABN/2							0.80000 J			
UNSPECIFIED ORGANIC ACID	38.65	ABN/2							3.00000 J			
UNSPECIFIED ALKANE	40.00	ABN/2							0.70000 J			
UNSPECIFIED ALKANE	42.74	ABN/2							0.70000 J			
UNSPECIFIED ALCOHOL	44.31	ABN/2							0.70000 J			
UNKNOWN	44.43	ABN/2							0.60000 J			
UNSPECIFIED ALKANE	47.29	ABN/2							1.00000 J			
UNKNOWN	47.50	ABN/2							0.60000 J			
UNKNOWN	48.18	ABN/2							0.60000 J			
UNKNOWN	50.14	ABN/2							2.00000 J			
UNKNOWN	51.50	ABN/2							0.70000 J			
UNKNOWN	51.65	ABN/2							0.90000 J			

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB INO - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

SITE NAME AND CODE: CABOT LANDFILL ARD983269275
CASE NUMBER: 16098

CONCENTRATIONS IN PARTS PER MILLION (mg/l)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Traffic Number			FP579/MFN161	FP580/MFN162	FP581/MFN163	FP582/MFN164	FP583/MFN165	FP584/MFN166	FP585/MFN167	TFADW11-01	TFADW11-02	TFADW11-03
Matrix			WATER	WATER	WATER	WATER	WATER	WATER	WATER	DRINKING WATER	DRINKING WATER	DRINKING WATER
Percent Moisture			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Location And/Or Sample Description			W-01 SPRING # 1	W-02 STREAM # 2	W-03 SPRING # 2	W-04 STREAM # 2	NORTH POND, DUPLICATE OF W-01	W-06 TRIP BLANK	W-07 STOCK POND	DW-01 R.C. HINSON WELL	DW-02 R.C. HINSON WELL, DUPLICATE OF DW-01	ANDY DEDMAN WELL, BACKGROUND SAMPLE
Compound Name	CAS/SCAN	CLASS										
ALUMINUM	7429-90-5	[illegible]	0.04840 J	0.04800 J	1.04000 J	0.10800 J	0.03400 J		2.47000 J	0.28900	0.27900	
ARSENIC	7[illegible]-38-2	[illegible]			0.00110 B				0.00160 B			
BARIUM	7440-39-3	1.0P	0.15700	0.03110	0.18500	0.17100	0.15800		0.12000	0.11400	0.11400	
CALCIUM	7440-47-2	IND	71.50000	14.20000	40.30000	45.40000	7.18000	0.03660 B	4.63000	6.94000	8.95000	
COBALT	7440-48-4	IND	0.00730		0.01230	0.01330	0.00940		0.01740			
COPPER	7440-50-8	1.05							0.00440 B			
IRON	7439-89-6	0.35	15.50000 J	0.13200 J	56.30000 J	8.46000 J	17.00000 J	0.00700 BJ	4.22000 J	0.57100	0.59200	
LEAD	7439-92-1	0.050	0.00110		0.00280				0.00960			
MAGNESIUM	7439-95-4	IND	17.90000	5.87000	0.11600	12.80000	17.90000		3.47000	6.75000	6.76000	
MANGANESE	7439-96-5	0.050	3.34000	0.13200	4.40000	6.47000	3.35000		1.37000	0.21700	0.21700	
POTASSIUM	7440-09-7	IND	5.78000	2.59000	4.09000	5.30000	5.93000		2.07000	2.14000	1.93000	
SODIUM	7440-23-5	IND	17.10000	8.27000	21.10000	22.10000	17.40000		14.40000	11.60000	11.60000	
THALLIUM	7440-28-0	IND				0.00100 J		0.00130 J				
VANADIUM	7440-62-2	IND							0.00760			
ZINC	7440-66-6	5.05	0.04120		0.02940		0.04580		0.04830	0.06100	0.05900	
CYANIDE	--------	IND	0.00320 B		0.00730 B		0.00440 B		0.00350 B			
ALKALINITY	--------	IND										
HARDNESS	--------	IND								0.05000	0.05000	
CHLOROETHANE	75-00-3	VOA/1	0.00700 J				0.01100					
METHYLENE CHLORIDE	75-09-2	VOA/1						0.00300 J	0.00200 J			
ACETONE	67-64-1	VOA/1	0.00400 BJ	0.00300 BJ				0.01000 BJ				
CARBON DISULFIDE	75-15-0	VOA/1	0.00300 J									
1,1-DICHLOROETHANE	75-34-3	VOA/1	0.00300 J				0.00400 J					
CHLOROFORM	67-66-3	VOA/1						0.00300 J				0.00320
BENZENE	71-43-2	VOA/1			0.00080 J							
TOLUENE	108-88-3	VOA/1						0.00070 J				
CHLOROBENZENE	108-90-7	VOA/1			0.00300 BJ	0.00100 J	0.00080 BJ					
PHENOL	108-95-2	ABN/1					0.00200 J					
4-METHYLPHENOL	106-44-5	ABN/1					0.02000					
BENZOIC ACID	65-85-0	ABN/1					0.00100 J					
DIETHYLPHTHALATE	84-66-2	ABN/1	0.00100 J		0.00100 J							
PHENANTHRENE	85-01-8	ABN/1			0.00300 J							
FLUORANTHENE	206-44-0	ABN/1			0.00300 J							
PYRENE	129-00-0	ABN/1			0.00200 J							
BENZO(A)ANTHRACENE	56-55-3	ABN/1			0.00100 J							
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	ABN/1			0.00400 J							
DI-N-OCTYLPHTHALATE	117-84-0	ABN/1			0.00600 J			0.00300 J				
UNKNOWN	4.12	ABN/2	0.00900 J									
UNKNOWN	43.58	ABN/2	0.00900 J									
UNKNOWN	45.15	ABN/2	0.01000 J									

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB IND - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
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R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

SITE NAME AND CODE: CABOT LANDFILL ARD983269275
CASE NUMBER: 16008

CONCENTRATIONS IN PARTS PER MILLION (mg/l)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Traffic Number			FP579/MFN161	FP580/MFN162	FP581/MFN163	FP582/MFN164	FP561/MFN165	FP584/MFN166	FP585/MFN167	ITFADW11-01	ITFADW11-02	ITFADW11-03
Matrix			WATER	WATER	WATER	WATER	WATER	WATER	WATER	DRINKING WATER	DRINKING WATER	DRINKING WATER
Percent Moisture			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Location And/Or Sample Description			W-01 SPRING # 1	W-02 STREAM # 2	W-03 SPRING # 2	W-04 STREAM # 2	NORTH POND, DUPLICATE OF W-01	W-06 TRIP BLANK	W-07 STOCK POND	DW-01 R.C. HINSON WELL	DW-02 R.C. HINSON WELL, DUPLICATE OF DW-01	ANDY DEDMAN WELL, BACKGROUND SAMPLE
Compound Name	CAS/SCAN	CLASS										
UNKNOWN	4.13	ABN/2		0.01000 J								
UNKNOWN	24.16	ABN/2			0.00800 J							
UNKNOWN	34.27	ABN/2			0.01000 J							
UNKNOWN	41.79	ABN/2			0.02000 J							
UNKNOWN	41.93	ABN/2			0.01000 J							
UNKNOWN	42.17	ABN/2			0.01000 J							
UNKNOWN	42.33	ABN/2			0.01000 J							
UNKNOWN	42.66	ABN/2			0.01000 J							
UNKNOWN	42.90	ABN/2			0.01000 J							
UNKNOWN	42.97	ABN/2			0.02000 J							
UNKNOWN	43.43	ABN/2			0.00900 J							
UNKNOWN	43.82	ABN/2			0.01000 J							
UNKNOWN	44.65	ABN/2			0.01000 J							
UNKNOWN	45.00	ABN/2			0.01000 J							
UNKNOWN	49.19	ABN/2			0.01000 J							
UNKNOWN	4.11	ABN/2				0.00800 J						
UNKNOWN	34.78	ABN/2				0.01000 J						
UNKNOWN	45.13	ABN/2				0.00900 J						
UNKNOWN	29.85	ABN/2					0.03000 J					
UNSPECIFIED ORGANIC ACID	30.20	ABN/2					0.10000 J					
UNSPECIFIED ORGANIC ACID	30.36	ABN/2					0.03000 J					
UNSPECIFIED ORGANIC ACID	30.56	ABN/2					0.07000 J					
UNKNOWN	32.53	ABN/2					0.08000 J					
UNKNOWN	32.64	ABN/2					0.10000 J					
UNSPECIFIED ORGANIC ACID	33.45	ABN/2					0.07000 J					
UNKNOWN	33.65	ABN/2					0.10000 J					
UNKNOWN	42.65	ABN/2					0.05000 J					
UNKNOWN	43.83	ABN/2					0.09000 J					
UNSPECIFIED ORGANIC ACID	45.01	ABN/2					0.50000 J					
UNKNOWN	46.13	ABN/2					0.30000 J					
UNKNOWN	47.02	ABN/2					0.06000 J					
UNSPECIFIED ORGANIC ACID	47.23	ABN/2					0.70000 J					
UNKNOWN	48.27	ABN/2					0.30000 J					
UNKNOWN	48.57	ABN/2					0.06000 J					
UNKNOWN	49.19	ABN/2					0.10000 J					
UNKNOWN	49.31	ABN/2					0.30000 J					
UNKNOWN	50.31	ABN/2					0.05000 J					
UNKNOWN	51.41	ABN/2					0.07000 J					
UNKNOWN	43.57	ABN/2						0.01000 J				
UNKNOWN	4.08	ABN/2							0.01000 J			

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB INO - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

SITE NAME AND CODE: CABOT LANDFILL ARD983269275
CASE NUMBER: 10498
Page 1 of 4
CONCENTRATIONS IN PARTS PER MILLION (mg/l)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

Compound Name	CAS/SCAN	CLASS	FP579/MFN161	FP580/MFN162	FP581/MFN163	FP582/MFN164	FP583/MFN165	FP584/MFN166	FP585/MFN167	1TFRDW11-01	1TFRDW11-02	1TFRDW11-03
Matrix			WATER	WATER	WATER	WATER	WATER	WATER	WATER	DRINKING WATER	DRINKING WATER	DRINKING WATER
Percent Moisture			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Location And/Or Sample Description			W-01 SPRING # 1	W-02 STREAM # 2	W-03 SPRING # 2	W-04 STREAM # 2	NORTH POND, DUPLICATE OF W-01	W-06 TRIP BLANK	W-07 STOCK POND	DW-01 R.C. HINSON WELL	DW-02 R.C. HINSON WELL, DUPLICATE OF DW-01	ANDY DEDMAN WELL, BACKGROUND SAMPLE
UNKNOWN	41.85	ABN/2							0.00900 J			
UNKNOWN	43.53	ABN/2							0.01000 J			
UNKNOWN	45.09	ABN/2							0.01000 J			
UNKNOWN	46.57	ABN/2							0.00800 J			
UNKNOWN	47.96	ABN/2							0.00700 J			

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB INO - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
2 - TENTATIVELY IDENTIFIED COMPOUND (TIC) H - HOUSTON LABORATORY ANALYTE X - OTHER ANALYTE
J - ESTIMATED CONCENTRATION (TIC, TCL LESS THAN CRQL, OR TCL WITH QA/QC OUT OF CONTROL LIMITS) C - MS CONFIRMATION
R - DATA FOR ANALYTE IS UNUSABLE B - POSSIBLE LABORATORY CONTAMINANT U - UNDETECTED P - PESTICIDE ID QUESTIONABLE

Chemical Data Summary

SITE NAME AND CODE: CABOT LANDFILL ARD983265275
CASE NUMBER: 16086

CONCENTRATIONS IN PARTS PER MILLION (mg/l)
Compiled by : Ecology & Environment, Inc.

TRAFFIC REPORT NUMBER AND STATION LOCATION

		Traffic Number	TFADW11-04									
		Matrix	DRINKING WATER									
		Percent Moisture	N/A									
		Location And/Or Sample Description	DW-04 TRIP BLANK									
Compound Name	CAS/SCAN	CLASS										
ALUMINUM	7429-90-5	IND										
ARSENIC	7440-38-2	0.050										
BARIUM	7440-39-3	1.0P	0.02500									
CALCIUM	7440-47-2	IND	5.78000									
COBALT	7440-48-4	IND										
COPPER	7440-50-8	1.05										
IRON	7439-89-6	0.35	1.97000									
LEAD	7439-92-1	0.050										
MAGNESIUM	7439-95-4	IND	8.72000									
MANGANESE	7439-96-5	0.050	0.64700									
POTASSIUM	7440-09-7	IND										
SODIUM	7440-23-5	IND	14.80000									
THALLIUM	7440-28-0	IND										
VANADIUM	7440-62-2	IND										
ZINC	7440-66-6	5.05	0.07400									
CYANIDE	---------	IND										
ALKALINITY	---------	IND	0.00800									
HARDNESS	---------	IND	0.05000									
CHLOROETHANE	75-00-3	VOA/1										
METHYLENE CHLORIDE	75-09-2	VOA/1										
ACETONE	67-64-1	VOA/1										
CARBON DISULFIDE	75-15-0	VOA/1										
1,1-DICHLOROETHANE	75-34-3	VOA/1										
CHLOROFORM	67-66-3	VOA/1										
BENZENE	71-43-2	VOA/1										
TOLUENE	108-88-3	VOA/1										
CHLOROBENZENE	108-90-7	VOA/1										
PHENOL	108-95-2	ABN/1										
4-METHYLPHENOL	106-44-5	ABN/1										
BENZOIC ACID	65-85-0	ABN/1										
DIETHYLPHTHALATE	84-66-2	ABN/1										
PHENANTHRENE	85-01-8	ABN/1										
FLUORANTHENE	206-44-0	ABN/1										
PYRENE	129-00-0	ABN/1										
BENZO(A)ANTHRACENE	56-55-3	ABN/1										
BIS(2-ETHYLHEXYL)PHTHALATE	117-81-7	ABN/1										
DI-N-OCTYLPHTHALATE	117-84-0	ABN/1										
UNKNOWN	148	ABN/2	0.00600 J									
UNKNOWN	1293	ABN/2	0.00500 J									

VOA - VOLATILE ABN - ACID/BASE/NEUTRAL PES - PESTICIDE/PCB IND - INORGANIC 1 - TARGET COMPOUND LIST COMPOUND (TCL)
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TARGET COMPOUND LIST ANALYTE LISTS

Samples for this site were analyzed for the specific Target Compound List (TCL) compounds on the following pages. Data Summary Tables included with this report list only those compounds detected in the samples. If a compound is not listed on the Data Summary Table but is included on the attached lists, it was not detected ' the samples. Four different sets of lists may be included, depending cr the analytical protocols for the samples. These lists include:

1. Houston EPA Laboratory Drinking Water Sample Analysis
2. CLP Multi-Media, Multi-Concentration Sample Analysis
3. CLP Low Concentration Water Sample Analysis
4. CLP High Concentration Sample Analysis

The lists include the CAS number for each analyte. CLP CRDLs (Contract Required Detection Limits-metals and cyanide) or CRQLs (Contract Required Quantitation Limits-organics) for each analyte are listed for each of the CLP protocols. For samples analyzed by the Houston EPA laboratory, CLP multi-media low concentration water CRDLs or CRQLs and Houston laboratory Detection limits (DL) are listed.

Note that sample specific CRDLs or CRQLs are dependent on sample size, dilution and moisture content (soils). Variations in sample size and sample dilutions are noted in the data evaluation. The moisture content of each soil sample is listed on the data summary sheet.

Descriptions of how to determine CLP medium concentration soil CRQLs are listed at the bottom of the page of the multi-media multi-concentration lists.

HOUSTON DRINKING WATER VOLATILE ORGANIC ANALYTES

ANALYTE	CAS #	CLP CRQL mg/l (ppm)	HOUSTON DL mg/l (ppm)
CHLOROMETHANE	74-87-3	0.010	0.005
BROMOMETHANE	74-83-9	0.010	0.005
VINYL CHLORIDE	75-01-4	0.010	0.005
CHLOROETHANE	75-00-3	0.010	0.005
METHYLENE CHLORIDE	75-09-2	0.005	0.005
ACETONE	67-64-1	0.010	0.005
CARBON DISULFIDE	75-15-0	0.005	0.005
1,1-DICHLOROETHENE	75-35-4	0.005	0.002
1,1-DICHLOROETHANE	75-34-3	0.005	0.002
1,2-DICHLOROETHENE (TOTAL)	540-59-0	0.005	NA
trans-1,2-DICHLOROETHENE	156-60-5	NA	0.002
cis-1,2-DICHLOROETHENE	156-59-2	NA	0.002
CHLOROFORM	67-66-3	0.005	0.002
1,2-DICHLOROETHANE	107-06-2	0.005	0.002
2-BUTANONE	78-93-3	0.010	0.005
1,1,1-TRICHLOROETHANE	71-55-6	0.005	0.002
CARBON TETRACHLORIDE	56-23-5	0.005	0.002
VINYL ACETATE	108-05-4	0.010	0.005
BROMODICHLOROMETHANE	75-27-4	0.005	0.002
1,2-DICHLOROPROPANE	78-87-5	0.005	0.002
cis-1,3-DICHLOROPROPENE	10061-01-5	0.005	0.002
TRICHLOROETHENE	79-01-6	0.005	0.002
DIBROMOCHLOROMETHANE	124-48-1	0.005	0.002
1,1,2-TRICHLOROETHANE	79-00-5	0.005	0.002
BENZENE	71-43-2	0.005	0.002
trans-1,3-DICHLOROPROPENE	10061-02-6	0.005	0.002
BROMOFORM	75-25-2	0.005	0.002
4-METHYL-2-PENTANONE	108-10-1	0.010	0.005
2-HEXANONE	591-78-6	0.010	0.005
TETRACHLOROETHENE	127-18-4	0.005	0.002
TOLUENE	108-88-3	0.005	0.005
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.005	0.002
CHLOROBENZENE	108-90-7	0.005	0.002
ETHYL BENZENE	100-41-4	0.005	0.005
STYRENE	100-42-5	0.005	0.005
XYLENES (TOTAL)	1330-20-7	0.005	NA
O-XYLENE	95-47-6	NA	0.005
M-XYLENE AND/OR P-XYLENE	108-38-3 106-42-3	NA	0.005
ACROLEIN	107-02-8	NA	0.1
ACRYLONITRILE	107-13-1	NA	0.1

NA - Not analyzed for by CLP or Houston laboratory.

HOUSTON DRINKING WATER ABN (SEMI-VOLATILE) ORGANIC ANALYTES

ANALYTE	CAS #	CLP CRQL mg/l (ppm)	HOUSTON DL mg/l (ppm)
PHENOL	108-95-2	0.010	0.004
bis(2-CHLOROETHYL) ETHER	111-44-4	0.010	0.002
2-CHLOROPHENOL	95-57-8	0.010	0.004
1,3-DICHLOROBENZENE	541-73-1	0.010	0.002
1,4-DICHLOROBENZENE	106-46-7	0.010	0.002
BENZYL ALCOHOL	100-51-6	0.010	0.004
1,2-DICHLOROBENZENE	95-50-1	0.010	0.002
2-METHYLPHENOL	95-48-7	0.010	0.006
bis(2-CHLOROISOPROPYL) ETHER	108-60-1	0.010	0.002
4-METHYLPHENOL	106-44-5	0.010	0.006
N-NITROSO-di-n-PROPYLAMINE	621-64-7	0.010	0.006
HEXACHLOROETHANE	67-72-1	0.010	0.002
NITROBENZENE	98-95-3	0.010	0.002
ISOPHORONE	78-59-1	0.010	0.004
2-NITROPHENOL	88-75-5	0.010	0.010
2,4-DIMETHYLPHENOL	105-67-9	0.010	0.006
BENZOIC ACID	65-85-0	0.050	0.010
bis(2-CHLOROETHOXY)METHANE	111-91-1	0.010	0.002
2,4-DICHLOROPHENOL	120-83-2	0.010	0.006
1,2,4-TRICHLOROBENZENE	120-82-1	0.010	0.002
NAPHTHALENE	91-20-3	0.010	0.002
4-CHLOROANILINE	106-47-8	0.010	0.004
HEXACHLOROBUTADIENE	87-68-3	0.010	0.002
4-CHLORO-3-METHYLPHENOL	59-50-7	0.010	0.008
2-METHYLNAPHTHALENE	91-57-6	0.010	0.002
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.010	0.010
2,4,6-TRICHLOROPHENOL	88-06-2	0.010	0.006
2,4,5-TRICHLOROPHENOL	95-95-4	0.050	0.006
2-CHLORONAPHTHALENE	91-58-7	0.010	0.002
2-NITROANILINE	88-74-4	0.050	0.008
DIMETHYLPHTHALATE	131-11-3	0.010	0.002
ACENAPHTHYLENE	208-96-8	0.010	0.002
2,6-DINITROTOLUENE	606-20-2	0.010	0.006
3-NITROANILINE	99-09-2	0.050	0.008
ACENAPHTHENE	83-32-9	0.010	0.002
2,4-DINITROPHENOL	51-28-5	0.050	0.030
4-NITROPHENOL	100-02-7	0.050	0.008
DIBENZOFURAN	132-64-9	0.010	0.002
2,4-DINITROTOLUENE	121-14-2	0.010	0.006
DIETHYLPHTHALATE	84-66-2	0.010	0.002
4-CHLOROPHENYL-PHENYL ETHER	7005-72-3	0.010	0.008
FLUORENE	86-73-7	0.010	0.002
4-NITROANILINE	100-01-6	0.050	0.008
4,6-DINITRO-2-METHYLPHENOL	534-52-1	0.050	0.020
N-NITROSODIPHENYLAMINE	86-30-6	0.010	0.004

HOUSTON DRINKING WATER ABN (SEMI-VOLATILE) ORGANIC ANALYTES (CONT.)

ANALYTE	CAS #	CLP CRQL mg/l (ppm)	HOUSTON DL mg/l (ppm)
4-BROMOPHENYL-PHENYLETHER	101-55-3	0.010	0.008
HEXACHLOROBENZENE	118-74-1	0.010	0.002
PENTACHLOROPHENOL	87-86-5	0.050	0.015
PHENANTHRENE	85-01-8	0.010	0.002
ANTHRACENE	120-12-7	0.010	0.002
DI-n-BUTYLPHTHALATE	84-74-2	0.010	0.002
FLUORANTHENE	206-44-0	0.010	0.002
PYRENE	129-00-0	0.010	0.002
BUTYLBENZYLPHTHALATE	85-68-7	0.010	0.004
3,3'-DICHLOROBENZIDINE	91-94-1	0.020	0.010
BENZO(a)ANTHRACENE	56-55-3	0.010	0.008
CHRYSENE	218-01-9	0.010	0.008
bis(2-ETHYLHEXYL)PHTHALATE	117-81-7	0.010	0.004
DI-n-OCTYLPHTHALATE	117-84-0	0.010	0.004
BENZO(b)FLUORANTHENE	205-99-2	0.010	0.008
BENZO(k)FLUORANTHENE	207-08-9	0.010	0.008
BENZO(a)PYRENE	50-32-8	0.010	0.008
INDENO(1,2,3-cd)PYRENE	193-39-5	0.010	0.008
DIBENZ(a,h)ANTHRACENE	53-70-3	0.010	0.008
BENZO(g,h,i)PERYLENE	191-24-2	0.010	0.008
BENZIDINE	92-87-5	NA	0.020

NA - Not analyzed for by CLP laboratory.

HOUSTON DRINKING WATER PESTICIDE/PCB ANALYTES

ANALYTE	CAS #	CLP CRQL mg/l (ppm)	HOUSTON DL mg/l (ppm)
alpha-BHC	319-84-6	0.00005	0.0002
beta-BHC	319-85-7	0.00005	0.0002
delta-BHC	319-86-8	0.00005	0.0003
gamma-BHC (lindane)	58-89-9	0.00005	0.0002
HEPTACHLOR	76-44-8	0.00005	0.0001
ALDRIN	309-00-2	0.00005	0.0002
HEPTACHLOR EPOXIDE	1024-57-3	0.00005	0.0001
ENDOSULFAN I	959-98-8	0.00005	0.0003
DIELDRIN	60-57-1	0.00010	0.0003
4,4'-DDE	72-55-9	0.00010	0.0005
ENDRIN	72-20-8	0.00010	0.0002
ENDOSULFAN II	33213-65-9	0.00010	0.0004
4,4'-DDD	72-54-8	0.00010	0.001
ENDOSULFAN SULFATE	1031-07-8	0.00010	0.0004
4,4'-DDT	50-29-3	0.00010	0.0006
METHOXYCHLOR	72-43-5	0.00050	0.0004
ENDRIN KETONE	53494-70-5	0.00010	NA
alpha-CHLORDANE	5103-71-9	0.00050	0.005
gamma-CHLORDANE	5103-74-2	0.00050	0.005
TOXAPHENE	8001-35-2	0.0010	0.005
AROCLOR-1016	12674-11-2	0.0005	0.005
AROCLOR-1221	11104-28-2	0.0005	0.010
AROCLOR-1232	11141-16-5	0.0005	0.005
AROCLOR-1242	53469-21-9	0.0005	0.005
AROCLOR-1248	12672-29-6	0.0005	0.005
AROCLOR-1254	11097-69-1	0.0010	0.005
AROCLOR-1260	11096-82-5	0.0010	0.005
ENDRIN ALDEHYDE	7421-93-4	NA	0.0001

NA - Not analyzed for by CLP or Houston EPA laboratory.

BOUSTON DRINKING WATER INORGANIC ANALYTES

ANALYTE	CAS #	CLP CRDL mg/l (ppm)	HOUSTON DL mg/l (ppm)
ALUMINUM	7429-90-5	0.200	0.1
ANTIMONY	7440-36-0	0.060	0.060
ARSENIC	7440-38-2	0.010	0.0046
BARIUM	7440-39-3	0.200	0.010
BERYLLIUM	7440-41-7	0.005	0.005
CADMIUM	7440-43-9	0.005	0.005
CALCIUM	7440-47-2	5.000	0.150
CHROMIUM	7440-47-3	0.010	0.010
COBALT	7440-48-4	0.050	0.020
COPPER	7440-50-8	0.025	0.020
IRON	7439-89-6	0.100	0.031
LEAD	7439-92-1	0.003	0.030
MAGNESIUM	7439-95-4	5.000	0.150
MANGANESE	7439-96-5	0.015	0.005
MERCURY	7439-97-6	0.0002	0.0002
NICKEL	7440-02-0	0.040	0.020
POTASSIUM	7440-09-7	5.000	1.000
SELENIUM	7782-49-2	0.005	0.0048
SILVER	7440-22-4	0.010	0.010
SODIUM	7440-23-5	5.000	0.500
THALLIUM	7440-28-0	0.010	0.0038
VANADIUM	7440-62-2	0.050	0.030
ZINC	7440-66-6	0.020	0.035
CYANIDE		0.010	0.02
ALKALINITY		NA	5
HARDNESS		NA	5

NA - Not analyzed for by CLP laboratory.

CLP MULTI-MEDIA MULTI-CONCENTRATION ORGANIC VOLATILE ANALYTES

ANALYTE	CAS #	WATER CRQL mg/l (ppm)	SOIL CRQL mg/kg (ppm)
CHLOROMETHANE	74-87-3	0.010	0.010
BROMOMETHANE	74-83-9	0.010	0.010
VINYL CHLORIDE	75-01-4	0.010	0.010
CHLOROETHANE	75-00-3	0.010	0.010
METHYLENE CHLORIDE	75-09-2	0.005	0.005
ACETONE	67-64-1	0.010	0.010
CARBON DISULFIDE	75-15-0	0.005	0.005
1,1-DICHLOROETHENE	75-35-4	0.005	0.005
1,1-DICHLOROETHANE	75-34-3	0.005	0.005
1,2-DICHLOROETHENE (TOTAL)	540-59-0	0.005	0.005
CHLOROFORM	67-66-3	0.005	0.005
1,2-DICHLOROETHANE	107-06-2	0.005	0.005
2-BUTANONE	78-93-3	0.010	0.010
1,1,1-TRICHLOROETHANE	71-55-6	0.005	0.005
CARBON TETRACHLORIDE	56-23-5	0.005	0.005
VINYL ACETATE	108-05-4	0.010	0.010
BROMODICHLOROMETHANE	75-27-4	0.005	0.005
1,2-DICHLOROPROPANE	78-87-5	0.005	0.005
cis-1,3-DICHLOROPROPENE	10061-01-5	0.005	0.005
TRICHLOROETHENE	79-01-6	0.005	0.005
DIBROMOCHLOROMETHANE	124-48-1	0.005	0.005
1,1,2-TRICHLOROETHANE	79-00-5	0.005	0.005
BENZENE	71-43-2	0.005	0.005
trans-1,3-DICHLOROPROPENE	10061-02-6	0.005	0.005
BROMOFORM	75-25-2	0.005	0.005
4-METHYL-2-PENTANONE	108-10-1	0.010	0.010
2-HEXANONE	591-78-6	0.010	0.010
TETRACHLOROETHENE	127-18-4	0.005	0.005
TOLUENE	108-88-3	0.005	0.005
1,1,2,2-TETRACHLOROETHANE	79-34-5	0.005	0.005
CHLOROBENZENE	108-90-7	0.005	0.005
ETHYL BENZENE	100-41-4	0.005	0.005
STYRENE	100-42-5	0.005	0.005
XYLENES (TOTAL)	1330-20-7	0.005	0.005

The above quantitation limits are for low concentration samples.

Medium concentration soil sample quantitation limits are 125 times the low concentration soil quantitation limits listed.

CLP MULTI-MEDIA MULTI-CONCENTRATION ORGANIC ABN (SEMI-VOLATILE) ANALYTES

ANALYTE	CAS #	WATER CRQL mg/l (ppm)	SOIL CRQL mg/kg (ppm)
PHENOL	108-95-2	0.010	0.330
bis(2-CHLOROETHYL) ETHER	111-44-4	0.010	0.330
2-CHLOROPHENOL	95-57-8	0.010	0.330
1,3-DICHLOROBENZENE	541-73-1	0.010	0.330
1,4-DICHLOROBENZENE	106-46-7	0.010	0.330
BENZYL ALCOHOL	100-51-6	0.010	0.330
1,2-DICHLOROBENZENE	95-50-1	0.010	0.330
2-METHYLPHENOL	95-48-7	0.010	0.330
bis(2-CHLOROISOPROPYL) ETHER	108-60-1	0.010	0.330
4-METHYLPHENOL	106-44-5	0.010	0.330
N-NITROSO-di-n-PROPYLAMINE	621-64-7	0.010	0.330
HEXACHLOROETHANE	67-72-1	0.010	0.330
NITROBENZENE	98-95-3	0.010	0.330
ISOPHORONE	78-59-1	0.010	0.330
2-NITROPHENOL	88-75-5	0.010	0.330
2,4-DIMETHYLPHENOL	105-67-9	0.010	0.330
BENZOIC ACID	65-85-0	0.050	1.600
bis(2-CHLOROETHOXY)METHANE	111-91-1	0.010	0.330
2,4-DICHLOROPHENOL	120-83-2	0.010	0.330
1,2,4-TRICHLOROBENZENE	120-82-1	0.010	0.330
NAPHTHALENE	91-20-3	0.010	0.330
4-CHLOROANILINE	106-47-8	0.010	0.330
HEXACHLOROBUTADIENE	87-68-3	0.010	0.330
4-CHLORO-3-METHYLPHENOL	59-50-7	0.010	0.330
2-METHYLNAPHTHALENE	91-57-6	0.010	0.330
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.010	0.330
2,4,6-TRICHLOROPHENOL	88-06-2	0.010	0.330
2,4,5-TRICHLOROPHENOL	95-95-4	0.050	1.600
2-CHLORONAPHTHALENE	91-58-7	0.010	0.330
2-NITROANILINE	88-74-4	0.050	1.600
DIMETHYLPHTHALATE	131-11-3	0.010	0.330
ACENAPHTHYLENE	208-96-8	0.010	0.330
2,6-DINITROTOLUENE	606-20-2	0.010	0.330
3-NITROANILINE	99-09-2	0.050	1.600
ACENAPHTHENE	83-32-9	0.010	0.330
2,4-DINITROPHENOL	51-28-5	0.050	1.600
4-NITROPHENOL	100-02-7	0.050	1.600
DIBENZOFURAN	132-64-9	0.010	0.330
2,4-DINITROTOLUENE	121-14-2	0.010	0.330
DIETHYLPHTHALATE	84-66-2	0.010	0.330
4-CHLOROPHENYL-PHENYL ETHER	7005-72-3	0.010	0.330
FLUORENE	86-73-7	0.010	0.330
4-NITROANILINE	100-01-6	0.050	1.600
4,6-DINITRO-2-METHYLPHENOL	534-52-1	0.050	1.600
N-NITROSODIPHENYLAMINE	86-30-6	0.010	0.330

CLP MULTI-MEDIA MULTI-CONCENTRATION ABN (SEMI-VOLATILE) ORGANIC ANALYTES
(CONT.)

ANALYTE	CAS #	WATER CRQL mg/l (ppm)	SOIL CRQL mg/kg (ppm)
4-BROMOPHENYL-PHENYLETHER	101-55-3	0.010	0.330
HEXACHLOROBENZENE	118-74-1	0.010	0.330
PENTACHLOROPHENOL	87-86-5	0.050	1.600
PHENANTHRENE	85-01-8	0.010	0.330
ANTHRACENE	120-12-7	0.010	0.330
DI-n-BUTYLPHTHALATE	84-74-2	0.010	0.330
FLUORANTHENE	206-44-0	0.010	0.330
PYRENE	129-00-0	0.010	0.330
BUTYLBENZYLPHTHALATE	85-68-7	0.010	0.330
3,3'-DICHLOROBENZIDINE	91-94-1	0.020	0.660
BENZO(a)ANTHRACENE	56-55-3	0.010	0.330
CHRYSENE	218-01-9	0.010	0.330
bis(2-ETHYLHEXYL)PHTHALATE	117-81-7	0.010	0.330
DI-n-OCTYLPHTHALATE	117-84-0	0.010	0.330
BENZO(b)FLUORANTHENE	205-99-2	0.010	0.330
BENZO(k)FLUORANTHENE	207-08-9	0.010	0.330
BENZO(a)PYRENE	50-32-8	0.010	0.330
INDENO(1,2,3-cd)PYRENE	193-39-5	0.010	0.330
DIBENZ(a,h)ANTHRACENE	53-70-3	0.010	0.330
BENZO(g,h,i)PERYLENE	191-24-2	0.010	0.330

The above quantitation limits are for low concentration samples.

Medium concentration soil sample quantitation limits are 60 times the low concentration soil quantitation limits listed.

CLP MULTI-MEDIA MULTI-CONCENTRATION ORGANIC PESTICIDE/PCB ANALYTES

ANALYTE	CAS #	WATER CRQL mg/l (ppm)	SOIL CRQL mg/kg (ppm)
alpha-BHC	319-84-6	0.00005	0.0080
beta-BHC	319-85-7	0.00005	0.0080
delta-BHC	319-86-8	0.00005	0.0080
gamma-BHC (lindane)	58-89-9	0.00005	0.0080
HEPTACHLOR	76-44-8	0.00005	0.0080
ALDRIN	309-00-2	0.00005	0.0080
HEPTACHLOR EPOXIDE	1024-57-3	0.00005	0.0080
ENDOSULFAN I	959-98-8	0.00005	0.0080
DIELDRIN	60-57-1	0.00010	0.0160
4,4'-DDE	72-55-9	0.00010	0.0160
ENDRIN	72-20-8	0.00010	0.0160
ENDOSULFAN II	33213-65-9	0.00010	0.0160
4,4'-DDD	72-54-8	0.00010	0.0160
ENDOSULFAN SULFATE	1031-07-8	0.00010	0.0160
4,4'-DDT	50-29-3	0.00010	0.0160
METHOXYCHLOR	72-43-5	0.00050	0.0080
ENDRIN KETONE	53494-70-5	0.00010	0.0160
alpha-CHLORDANE	5103-71-9	0.00050	0.0080
gamma-CHLORDANE	5103-74-2	0.00050	0.0080
TOXAPHENE	8001-35-2	0.0010	0.160
AROCLOR-1016	12674-11-2	0.0005	0.080
AROCLOR-1221	11104-28-2	0.0005	0.080
AROCLOR-1232	11141-16-5	0.0005	0.080
AROCLOR-1242	53469-21-9	0.0005	0.080
AROCLOR-1248	12672-29-6	0.0005	0.080
AROCLOR-1254	11097-69-1	0.0010	0.160
AROCLOR-1260	11096-82-5	0.0010	0.160

The above quantitation limits are for low concentration samples.

Medium concentration soil sample quantitation limits are 15 times the low concentration soil quantitation limits listed.

CLP MULTI-MEDIA MULTI-CONCENTRATION FULL INORGANIC ANALYTES

ANALYTE	CAS #	WATER CRDL mg/l (ppm)	SOIL CRDL mg/kg (ppm)
ALUMINUM	7429-90-5	0.200	40
ANTIMONY	7440-36-0	0.060	12
ARSENIC	7440-38-2	0.010	2
BARIUM	7440-39-3	0.200	40
BERYLLIUM	7440-41-7	0.005	1
CADMIUM	7440-43-9	0.005	1
CALCIUM	7440-47-2	5.000	1000
CHROMIUM	7440-47-3	0.010	2
COBALT	7440-48-4	0.050	10
COPPER	7440-50-8	0.025	5
IRON	7439-89-6	0.100	20
LEAD	7439-92-1	0.003	0.6
MAGNESIUM	7439-95-4	5.000	1000
MANGANESE	7439-96-5	0.015	3
MERCURY	7439-97-6	0.0002	0.1
NICKEL	7440-02-0	0.040	8
POTASSIUM	7440-09-7	5.000	1000
SELENIUM	7782-49-2	0.005	1
SILVER	7440-22-4	0.010	2
SODIUM	7440-23-5	5.000	1000
THALLIUM	7440-28-0	0.010	2
VANADIUM	7440-62-2	0.050	10
ZINC	7440-66-6	0.020	4
CYANIDE		0.010	5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD
HOUSTON, TX 77099

Ref. Case No. 16008

Site Name Cabot Landfill

Date: 4 / 25 / 91

Subject: **CLP Data Review**

From: Michael L. Daggett, Chief, Organic Lab Section; 6E-HL MCRitter for

To: E. Sierra, 6E-SH

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section. Samples were:

INORGANIC:

ORGANIC: FP-572 → FP-585

The data was found:

( ) Acceptable

(X) Provisional; use of data requires caution. Problems are noted in Review Summary.

( ) Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: Mahmoud El-Feky, 6E-HL
Mike Hiatt, EMSL/Las Vegas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

ORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 16008 SAS 6001HQ
LABORATORY JORDAN
CONTRACT# SAS 6001HQ
SDG# FP572
SOW# RAS IFB (2/88)

TPO: ACTION ____ FYI X

SITE Cabot Landfill
NO. OF SAMPLES 14
MATRIX Water/Soil
REVIEWER (IF NOT ESD) ESAT
REVIEWER'S NAME Harry A. Kreigh
COMPLETION DATE April 24, 1991
ACCT# 1TGBDNB4 SF# TFBUZZ

SAMPLE NO.

FP-572	FP-576	FP-580	FP-584	
FP-573	FP-577	FP-581	FP-585	
FP-574	FP-578	FP-582		
FP-575	FP-579	FP-583		

DATA ASSESSMENT SUMMARY

	VOA	BNA	PEST	OTHER
1. HOLDING TIMES	O	O	O	N/A
2. GC/MS TUNE/INSTR. PERFORM.	O	O	O	N/A
3. CALIBRATIONS	M	M	X	N/A
4. BLANKS	O	O	O	N/A
5. SURROGATES	O	O	O	N/A
6. MATRIX SPIKE/DUPLICATE	O	X	O	N/A
7. OTHER QC	N/A	N/A	N/A	N/A
8. INTERNAL STANDARDS	O	O	N/A	N/A
9. COMPOUND IDENTIFICATION	O	M	O	N/A
10. SYSTEM PERFORMANCE	O	O	O	N/A
11. OVERALL ASSESSMENT	M	M	X	N/A

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
NA = Not applicable.

ACTION ITEMS: Acetone and benzoic acid failed %RSD and/or %D calibration criteria. TCL compounds 3-nitroaniline, 4-nitroaniline 3,3'-dichlorobenzidine, and 2-butanone failed minimum RRF guidelines.

AREAS OF CONCERN: GPC deliverables were omitted.

NOTABLE PERFORMANCE:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TX 77099

MEMORANDUM

Date: April 24, 1991

Subject: CLP Data Review

From: Mahmoud El-Feky, Acting TPO, Region 6

To: Michael Daggett, Chief, Organic Section, Houston Branch, Region 6,

Attached is the data review summary for Case # 16008
SDG # FP572
Site Cabot Landfill

Data was found: (X) Provisional

( ) Unacceptable

Action required by TPO: ( ) Yes

(X) No

COMMENTS:

1. Acetone and benzoic acid failed %RSD and/or %D calibration criteria.

2. TCL compounds 3-nitroaniline, 4-nitroaniline, 3,3'-dichlorobenzidine, and 2-butanone failed minimum RRF guidelines.

3. GPC deliverables were omitted.

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COMMENTS/CLARIFICATIONS
REGION VI CLP QA REVIEW

CASE 16008 **SDG** FP572 **SITE** Cabot Landfill **LAB** JORDAN

The following is a summary of sample qualifiers used by Region VI in reporting this CLP data:

No.	Acceptable	Provisional	Unacceptable
VOA	7	7	
BNA		14	
PEST	14		
OTHER	N/A		

COMMENTS: The case consisted of 7 water and 7 soil samples for complete RAS organics analysis. The data package arrived on time for the 35 day turnaround. Low level analyses were performed. VOA chlorinated and aromatic compounds, benzoic acid, PNAs, phenols, and chlordanes were reported in the samples. Data for 7 VOA and 14 BNA samples are provisional due to minor deficiencies in calibrations and compound identification. An evidence audit was conducted on the complete sample delivery group file (CSF) deliverables and the Evidence Audit Checklist is attached to this report.

1. **HOLDING TIMES** - Acceptable. The samples were extracted and analyzed within technical (40CFR136) and contractual holding time limits.

2. **GC/MS TUNE/INSTRUMENT PERFORMANCE** - Acceptable. BFB and DFTPP met GC/MS tuning criteria for VOA and BNA analyses. Internal standard areas were within QC control limits for VOA and BNA samples. Pest/PCB analyses met instrument performance requirements.

3. **CALIBRATIONS** - Provisional. CCC and SPCC compounds met QC criteria for VOA and BNA calibrations. Results are estimated for acetone in samples FP-579, FP-580, and FP-584, and for benzoic acid in sample FP-573 because these compounds failed %RSD and/or %D calibration guidelines. The following quantitation limits are unusable because the compounds failed minimum RRF criteria:

   3-nitroaniline and 4-nitroaniline in all samples,
   2- butanone in all water samples, and
   3,3'-dichlorobenzidine in water samples FP-579, FP-580, FP-581, FP-582, FP-583, and FP-584.

Some pesticides exceeded %D calibration guidelines, but sample data were not affected.

ORGANIC QA CHECKLIST
CONTINUATION PAGE

CASE NO. 16008 SDG: FP572 **SITE** Cabot Landfill

COMMENTS:

4. **BLANKS** - Acceptable. Method blanks met QC requirements in all fractions. VOA blanks contained acetone, methylene chloride, chlorobenzene, 4-methyl-2-pentanone, and xylene. Sample results are estimated for acetone and methylene chloride < 10x blank levels and for chlorobenzene, 4-methyl-2-pentanone, and xylene < 5x blank levels due to possible laboratory contamination.

5. **SURROGATES** - Acceptable. Surrogate recoveries were within QC limits for all fractions.

6. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE** - Acceptable. MS/MSD recoveries were within QC limits for VOA and Pest/PCB samples. MS/MSD recoveries for pentachlorophenol exceeded QC limit in low soil samples, but sample data were not affected.

7A. **COMPOUND IDENTIFICATION** - Provisional. Aromatic and chlorinated TCL compounds were reported in VOA samples, in addition to blank contaminants. Benzoic acid, PNAs, phenols, and common phthalate esters were identified in BNA samples. Sample spectra generally met identification criteria. Identification of benzo(a)anthracene is tentative in sample FP-581 due to spectral interferences. That result is estimated and should be used with caution. Both chlordane isomers were reported < CRQL in sample FP-575.

7B. **DATA COMPLETENESS** - Provisional. The data package was essentially complete, except for omitted GPC deliverables. Some BNA TICs require "B" flags. The laboratory was notified of needed resubmissions (See attached Fax Record Log).

8. **CASE ASSESSMENT** - Data for 7 VOA and 14 BNA samples are provisional due to problems with calibrations and compound identification. Data for 7 VOA and 14 Pest/PCB samples are acceptable.

In Reference to Case No(s):
16008 SDG: FP572

REGIONAL/LABORATORY COMMUNICATION SYSTEM
FAX Record Log

Date of FAX: April 24, 1991
Laboratory Name: JORDAN
Lab Contact: Dr. James F. Galasyn
Region: 6
Regional Contact: Harry Kreigh - ESAT

FAX sent by: ______Laboratory ___X___Region

In reference to data for the following fraction(s):

BNA

Summary of Questions/Issues:

A. General

1. Please submit Form DC-1 and use custody seals on all future submissions of original data.

2. Please submit GPC deliverables for BNA and Pest/PCB samples and calibration standards.

B. BNA

1. FP-573 and FP-583: Standard spectra were omitted for benzoic acid.

2. TICs consistent with blank contaminants were reported in samples, except samples FP-580, FP-581, and FP-583, but results were not flagged "B". Please review the data.

Please respond to the above issues within 10 days to:

USEPA Region 6 Lab
10625 Fallstone Road
Houston, TX 77099

For further information, please call me at:(713) 983-2137 or fax: (713) 983-2248.

Harry A. Kreigh — April 24, 1991
Harry A. Kreigh — Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE RD
HOUSTON, TX 77099

Ref. Case No. 16008

Site Name Cabot Landfill

Date: 5/15/91

Subject: **CLP Data Review**

From: Michael L. Daggett, Chief, Organic Lab Section; 6E-HL

To: E. Sierra, 6E-SH

A review of the laboratory raw data for the reference site has been completed by members of the Laboratory Section. Samples were:

INORGANIC: MFN154 → MFN167

ORGANIC:

The data was found:

( ) Acceptable

(X) Provisional; use of data requires caution. Problems are noted in Review Summary.

( ) Unacceptable; data should not be used. Problems are noted in Review Summary.

Questions regarding the review can be addressed to me.

Attachments

cc: Mahmoud El-Feky, 6E-HL
Mike Hiatt, EMSL/Las Vegas

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

MEMORANDUM

Date: May 14, 1991

Subject: CLP Data Review

From: Mahmoud El-Feky, Acting TPO, Region 6 M. El-Feky

To: Michael L. Daggett, Chief, Organic Lab Section; 6E-HL

Attached is the data review summary for Case # 16008
SDG # MFN154
Site Cabot Landfill

Data was found: (X) Provisional

( ) Unacceptable

Action required by TPO: ( ) Yes

(X) No

COMMENTS:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
HOUSTON BRANCH
10625 FALLSTONE ROAD
HOUSTON, TEXAS 77099

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO. 16008
LABORATORY N.F.T. Inc. (CO)
CONTRACT # 68-D0-0145
SDG # MFN154
SOW# 3/90
TPO: ACTION ____ FYI X

SITE Cabot Landfill
NO. OF SAMPLES
MATRIX 7/soil, 7/water
REVIEWER (IF NOT ESD) ESAT
REVIEWER'S NAME Mike Fertitta
COMPLETION DATE May 14, 1991
ACCT # 1TGBDNB4 SF # TGBUZZ

SAMPLE NO.: MFN154, MFN155, MFN156, MFN157, MFN158, MFN159, MFN160, MFN161, MFN162, MFN163, MFN164, MFN165, MFN166, MFN167

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
1. HOLDING TIMES	O	O	O	O
2. CALIBRATIONS	O	O	O	O
3. BLANKS	X	X	O	X
4. ICS	O			
5. LCS	O	O		
6. DUPLICATE ANALYSIS	X	O	O	O
7. MATRIX SPIKE	X	X	O	O
8. MSA		N/A		
9. SERIAL DILUTION	X			
10. SAMPLE VERIFICATION	O	X	O	O
11. OTHER QC	N/A	N/A	N/A	N/A
12. OVERALL ASSESSMENT	X	X	O	X

O = Data had no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
N/A= Not applicable

ACTION ITEMS: Blank concentrations were above the instrument detection limits for six analytes; differences between duplicate results exceeded quality control limits for one analyte in the soil samples; matrix spike recoveries were outside of limits for two analytes in the soil samples; serial dilution differences exceeded the limit for two analytes in the water samples, and FAA analytical spike recoveries exceeded limits for 11 of 64 determinations.

AREAS OF CONCERN:

NOTABLE PERFORMANCE: Mercury met quality control criteria.

INORGANIC QA REVIEW
CONTINUATION PAGE

Case 16008 SDG MFN154 Site Cabot Landfill Lab NFT, Inc. (CO)

COMMENTS: Seven soil and seven water samples were analyzed at low concentrations for total metals and cyanide. The data package is provisional because: blank concentrations were above the instrument detection limits for six analytes; differences between duplicate results exceeded quality control limits for one analyte in the soil samples; matrix spike recoveries were outside of limits for two analytes in the soil samples; serial dilution differences exceeded the limit for two analytes in the water samples, and FAA analytical spike recoveries exceeded limits for 11 of 64 determinations.

1. Holding Times

All holding time criteria were met.

2. Calibrations

All calibrations were acceptable.

3. Blanks

A. Calibration Blanks

The concentrations of calcium and cyanide in the calibration blanks were above the instrument detection limits (IDL) but less than the contract required detection limits (CRDL). Sample results greater than the IDL's but less than five times the amount in any blank should be qualified as undetected (U).

The concentrations of lead in the calibration blanks were above the negative IDL. False negatives are possible.

B. Preparation Blanks

The concentrations of aluminum, calcium, and iron in the preparation blank for the soil samples were above the instrument detection limits (IDL) but less than the contract required detection limits (CRDL). Sample results greater than the IDL's but less than five times the amount in any blank should be qualified as undetected (U).

The concentrations of arsenic, calcium, iron, and cyanide in the preparation blank for the water samples were above the IDL's but less than the CRDL's. Sample results greater than the IDL's but less than five times the amount in any blank should be qualified as undetected (U).

C. All other blank results were acceptable.

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4. ICS

   Interference check sample criteria were met.

5. LCS

   All laboratory control sample results were acceptable.

6. **Duplicate Analysis**

   The chromium results for the soil samples are qualified as estimated (J) due to a 56.6% relative percent difference for duplicate results.

   All other duplicate results met technical quality control criteria.

7. **Matrix Spike**

   A. Pre-digestion/Pre-distillation Matrix Spike Recovery

      1. The antimony results for the soil samples are qualified as estimated (UJ) due to a pre-digestion matrix spike recovery of 71.2%. Matrix interference is suspected.

      2. The chromium results for the soil samples are qualified as estimated (J) due to a pre-digestion matrix spike recovery of 62.7%. Matrix interference is suspected.

   B. Furnace Atomic Absorption Quality Control

      1. The selenium results for MFN154, MFN155, and MFN163 are qualified as estimated (J and UJ) due to FAA analytical spike recoveries of 79.0%, 80.0% and 68.0%, respectively. Matrix interference is suspected.

      2. The selenium results for MFN156 and MFN160 are qualified as estimated (UJ) due to FAA analytical spike recoveries of 116.0% and 121.0%, respectively. Matrix interference is suspected.

      3. The thallium results for MFN161, MFN163, MFN164, MFN165, MFN166 and MFN167 are qualified as estimated (J and UJ) due to FAA analytical spike recoveries ranging from 72.5% to 83.5%. Matrix interference is suspected.

   C. All other analytes had acceptable pre-digestion/pre-distillation matrix spike recoveries and FAA quality control.

8. Serial Dilutions

The aluminum results for the water samples are qualified as estimated (J and UJ) due to a serial dilution difference of 94.7%. Physical or chemical interference exist due to the sample matrix.

The iron results for the water samples are qualified as estimated (J) due to a serial dilution difference of 14.4%. Physical or chemical interference exist due to the sample matrix.

All other serial dilution results met quality control criteria.

9. Sample Verification

A. The "W" flags are not necessary for arsenic in MFN155, MFN161, MFN162, MFN163, MFN164, MFN165, MFN166 and MFN167.

B. The "M" flags are not necessary for arsenic in MFN162, MFN164 and MFN166.

C. The "W" flags are not necessary for lead in MFN161, MFN162, MFN163, MFN164, MFN165, MFN166 and MFN167.

D. The "W" flags are not necessary for selenium in MFN157, MFN158, MFN159, MFN161, MFN162, MFN164, MFN165, MFN166 and MFN167.

E. Form 14 was corrected in resubmission.

10. Other QC

None

11. Overall Assessment

The data package is provisional for the following reasons:

A. Blank concentrations were above the instrument detection limits for six analytes.
B. Differences between duplicate results exceeded quality control limits for one analyte in the soil samples.
C. Matrix spike recoveries were outside of limits for two analytes in the soil samples.
D. Serial dilution differences exceeded the limit for two analytes in the water samples.
E. FAA analytical spike recoveries exceeded limits for 11 of 64 determinations.
F. All other technical requirements were met.

In Reference to Case
Case 16008 SDG MFN154
Page 1 of 1 pages

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone/FAX Record Log

Date of Call: May 14, 1991

Laboratory Name: N.F.T., Inc. (CO)

Lab Contact: Ronald L. Keil

Region: 6

Regional Contact: Michael J. Fertitta (ESAT)

Call Initiated by: Region

In reference to data for the following sample numbers:

MFN154, MFN155, MFN156, MFN157, MFN158, MFN159, MFN160, MFN161, MFN162, MFN163, MFN164, MFN165, MFN166, MFN167

Summary of Questions/Issues Discussed:

A. The "W" flags are not necessary for arsenic in MFN155, MFN161, MFN162, MFN163, MFN164, MFN165, MFN166 and MFN167.

B. The "M" flags are not necessary for arsenic in MFN162, MFN164 and MFN166.

C. The "W" flags are not necessary for lead in MFN161, MFN162, MFN163, MFN164, MFN165, MFN166 and MFN167.

D. The "W" flags are not necessary for selenium in MFN157, MFN158, MFN159, MFN161, MFN162, MFN164, MFN165, MFN166 and MFN167.

E. Form 14 was corrected in resubmission.

Summary of Resolutions:

Lab will look into items and will submit data within ten working days.

Michael J. Fertitta 5/14/91
Signature Date

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

4 5 1

ManTech Environmental Technology, Inc.
ESAT Region 6

c/o US EPA 10625 Fallstone Road, Houston, TX 77099 (713) 983-2243

FACSIMILE COVER SHEET

Please deliver the following pages to:

Name Ronald L. Keil

Firm N.F.T., Inc.

City Golden **State** CO

Telephone (303) 278-1888 **Ext.** ____________

Fax Telephone No. (303) 278-1399 **Ext.** ____________

Sender:

Name Michael J. Fertitta

Date May 14, 1991 **Time** ________________

Total Number of pages including this Cover Sheet 2

If you do not receive all the pages or if any pages are unclear, please call: (713) 983-2243.

MESSAGES: ________________________________

Fax Model No. Panafax UF-620 Fax No. (713) 983-2248

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054 2

COMPLETE SAMPLE DELIVERY GROUP FILE (CSF)
EVIDENCE AUDIT CHECKLIST

Region 6

Audit No. 16008MFN154

Lab Name: N.F.T. Inc.

EPA Lab Code: NFT

Lab Location: Golden, CO

Date CSF Received: 4/16/91 Box No. (s): 1

Routine Analytical Services (RAS) No: 16008

Special Analytical Services (SAS) No: ________

Sample Delivery Group (SDG) No: MFN154

No. of Samples: 14 Contract Type: Inorganic

Date of Audit: 5/14/91 Re-submitted CSF: Y/N? N

Auditor: Michael J. Fertitta (Print Name) Auditor: Michael J. Fertitta (Signature)

EVIDENCE AUDIT CHECKLIST:

	Yes	No	N/A
Custody Seals			
1. Custody seals present?	(X)	( )*	( )
2. Custody seals intact?	(X)	( )	( )
Form DC-2			
3. Form DC-2 present?	(X)	( )*	( )
4. Numbering scheme on Form DC-2 accurate?	(X)	( )	( )
5. Enclosed documents listed?	(X)	( )	( )
6. Listed documents enclosed?	(X)	( )*	( )

COMPLETE SAMPLE DELIVERY GROUP FILE (CSF)
EVIDENCE AUDIT CHECKLIST

Region 6 | Audit No. 16008MFN154

EVIDENCE AUDIT CHECKLIST:

	Yes	No	N/A
Form DC-1			
7. Form DC-1 present?	(X)	( )*	( )
8. Form DC-1 complete?	(X)	( )	( )
9. Form DC-1 accurate?	(X)	( )	( )
Chain-of-Custody Record(s)			
10. Chain-of-custody record(s) present?	(X)	( )*	( )
11. Chain-of-custody record(s) signed?	(X)	( )*	( )
12. Chain-of-custody record(s) dated?	(X)	( )*	( )
Traffic Reports			
13. Traffic report(s) or packing list(s) present?	(X)	( )*	( )
14. Traffic report(s) or packing lists(s) signed?	(X)	( )	( )
15. Traffic reports(s) or packing list(s) dated?	(X)	( )	( )
Airbills			
16. Airbill present/airbill sticker identified?	(X)	( )*	( )
17. Airbill signed?	(X)	( )	( )
18. Airbill dated?	(X)	( )	( )

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4 5 4

COMPLETE SAMPLE DELIVERY GROUP FILE (CSF)
EVIDENCE AUDIT CHECKLIST

Region 6 Audit No. 16008MFN154

EVIDENCE AUDIT CHECKLIST:

	Yes	No	N/A
Sample Tags			
19. Sample Tags present?	(X)	( )	( )
20. Should sample tags be present?	( )*	( )	(X)
Document Control			
21. Laboratory documents complete?	(X)	( )	( )
22. Laboratory documents legible?	(X)	( )*	( )
23A. Original documents included in CSF?	(X)	( )	( )
DC-2	(X)	( )	( )
DC-1	(X)	( )	( )
EPA Chain-of-Custody Records	(X)	( )	( )
Traffic Report/SAS Packing List	(X)	( )	( )
Shipping Documents (e.g., airbills, hand-delivery of sample receipts)	(X)	( )	( )
23B. If "NO", does the copy indicate where original documents are located?			
DC-2	( )	( )	( )
DC-1	( )	( )	( )
EPA Chain-of-Custody Records	( )	( )	( )
Traffic Report/SAS Packing List	( )	( )	( )
Shipping Documents	( )	( )	( )

* Requires the initiation of corrective action measures by Regional Evidence Auditors

COMPLETE SAMPLE DELIVERY GROUP FILE (CSF)
EVIDENCE AUDIT CHECKLIST

Region 6 Audit No. 16008MFN154

EVIDENCE AUDIT CHECKLIST:

Document Control (continued)

24. Auditor Comments:

QUESTION NO.	COMMENTS
________	____________________
________	____________________
________	____________________
________	____________________

DO NOT WRITE IN BOX BELOW

Date Received by CEAT: ___/___/___ Date Entered: ___/___/___

Entered By: ______________________
(Print Name)

____
(Signature)

Please copy this form, complete the Evidence Audit Checklist, and mail the original completed Evidence Audit Checklist to the:

Attn: CSF Evidence Audit Program
Contract Evidence Audit Team (CEAT-TechLaw)
12600 West Colfax Avenue, Suite C-310
Lakewood, CO 80215

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6 5 4

APPENDIX B

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO. 16008

PROJECT NAME

SAMPLERS: (Signature) Greg Shaughnessy, Lonnie Ebbitt, Michael Watson

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOA's	Organic GC/MS	Pesticide (PCBs)				REMARKS: EPA TAG #s	CLP Traffic No.
W2	3-5-91	1028		✓	Stream #1	6	✓	✓	✓				6-074171 6-074172	FP 580
													6-074173 6-074174	
													6-074175 6-074176	
W3	3-5-91			✓	Spring (Source)	6	✓	✓	✓				6-074177 6-074178	FP 581
													6-074179 6-074180	
													6-074181 6-074184	
W4	3-5-91			✓	Stream #2	6	✓	✓	✓				6-074185 6-0741[illegible]	FP 582
													6-074187 6-074188	
													6-074189 6-074190	

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Michael Watson	3-5-91 1800	Federal Express			
Relinquished by: (Signature)	**Date / Time**	**Received by: (Signature)**	**Relinquished by: (Signature)**	**Date / Time**	**Received by: (Signature)**

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				A. bill # 6773364534

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

6-05277

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.: ARD 783969775
PROJECT NAME: CaboT Landfill

SAMPLERS: (Signature) Michael Watson Lonnie Gilley

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Metals/Hardness	Cyanide	VOAS	Extractables/Pest.	alkalinity		REMARKS
DW1	3/5/91	12:00		✓	R.C. [illegible] Well	9	1	1	2	4	1		6-074097, 6-074098, 6-074099, 6-074100, 6-074101, 6-074102, 6-074103, 6-074104, 6-074129
~~DW2~~	~~3/5/91~~	~~12:15~~		~~✓~~	~~Stan Williams~~	~~24~~	~~2~~	~~2~~	~~6~~	~~12~~	~~2~~ (MA)		
DW4	3/5/91	8:56		✓	[illegible] Scott	9	1	1	2	4	1		6-074139, 6-074140, 6-074141, 6-074142, 6-074143, 6-074144, 6-074145, 6-074146, 6-074147
DW2	3/5/91	12:15		✓	Stan Williams	24	2	2	6	12	2		6-074105, 6-074106, 6-074107, 6-074108, 6-074109, 6-074110, 6-074111, 6-074112, 6-074113, 6-074114, 6-074115, 6-074117, 6-074116, 6-074118, 6-074119, 6-074120, 6-074121, 6-074122, 6-074123, 6-074124, 6-074125, 6-074126, 6-074127, 6-074128

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Michael Watson / Lonnie Gilley	3/5/91 15:30				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks AiR Bill 6993364523	

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6-05276

ONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.: 16008
PROJECT NAME:

SAMPLERS (Signature): [illegible] Michael Watson, Lonnie [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Volatile Organics	Organics GC/MS	Pesticides				REMARKS
S1	3/5/91	09:27		✓	Spring #1	2	✓						6-074069, 6-074070 FP 572
~~S2~~						1		✓	✓				6-074071 FP 572
~~S3~~ S5	3/5/91	09:27		✓	[illegible]	2	✓						6-074087, 6-074088 FP 576
						1		✓	✓				6-074086 FP 576
S2	3/5/91	10:32		✓	Stream #1	2	✓						6-074075, 6-074076 FP 573
						1		✓	✓				6-074074 FP 573
S4	3/5/91	13:30		✓	Stream #2	2	✓						6-074083, 6-074084 FP 575
						1		✓	✓				6-074082 FP 575
S3	3/5/91	12:10 12:30		✓	Spring #2								6-074077, 6-074078 FP 574
								✓	✓				6-074080 FP 574

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[illegible]	3/5/91 18:00				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	AirBill # 6993364534

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

6-05275

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

PROJ. NO. 16008
PROJECT NAME

SAMPLERS: (Signature) Michael Watson

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS	Volatile Organics	Organics GC/MS	Pesticides/PCBs				REMARKS
W1	3/5/91	09:17		✓	Spring [illegible] Source	2	✓						6-074161, 6-074162 FP579
						4		✓	✓				6-074163, 6-074164, 6-074165, 6-074166 FP579
W9	3/5/91	0922		✓	North [illegible]	2	✓						6-074193, 6-074194 FP583
						4		✓	✓				6-074195, 6-074196, 6-074197, 6-074198 FP583
W6	3/5/91	0930 08:40		✓	North Pond #2	2	✓						6-074201, 6-074202 FP584
						4		✓	✓				6-074203, 6-074204, 6-074205, 6-074206 FP584 585

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Michael Watson	3/5/91 1800	Federal Express			

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				Federal Express Airbill # 6493364534

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6-05278

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.: ARD983269275
PROJECT NAME: Cobot Landfill
SAMPLERS: (Signature) Lonnie Eilley Lana Robinson

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Metals/Hardness	Cyanide	Alkalinity	VOAS	ABN/Pest		REMARKS
D003	3/6/91			✓	[illegible]	9	✓	✓	✓	✓	✓		6-074130, 6-074131, 6-074132, 6-074133, 6-074134, 6-074135, 6-074136, 6-074137, 6-074138

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Lonnie Eilley, Lana Robinson	3-6-91 [illegible]	[illegible]			

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				AirBill # 6993364442

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2 of 4

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ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO. 16008

PROJECT NAME

SAMPLERS: (Signature)

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	Metals	Cyanide					REMARKS
56	3/6/91			✓		1	✓	✓					6-074087
57	3/6/91	11:25		✓		1	✓	✓					6-074093
W7	3/6/91	11:20		✓		4	✓	✓					6-074065, 6-074066, 6-074067, 6-074068

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	3/6/91				

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks

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ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO. 16008

PROJECT NAME [illegible]

SAMPLERS: (Signature) Michael Watson [illegible] Greg Strang [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOAS	ABN/Pesticide					REMARKS
56	3/6/91	07:45 [illegible]		✓	[illegible] #24	3	✓	✓					6-074090, 6-074091, 6-074092
57	3/6/91	11:25		✓	[illegible]	3	✓	✓					6-074094, 6-074095, 6-074096
W7.	3/6/91	11:20		✓	[illegible]	18	✓	✓					6-074209, 6-074210, 6-074211, 6-074212, 6-074213, 6-074214, 6-074053, 6-074054, 6-074055, 6-074056, 6-074057, 6-074058, 6-074059, 6-074060, 6-074061, 6-074062, 6-074063, 6-074064

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[illegible]	3/6/91 [illegible]				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks AiR Bill # 6993364464	

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ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.: 16008

PROJECT NAME:

SAMPLERS: [illegible] Michael Watson [illegible]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	metals	Cyanide	REMARKS
S1	3/5/91	09:22		✓	[illegible]	1	✓	✓	6-074072 MFN154/EP572
S2	3/5/91	10:32		✓	[illegible]	1	✓	✓	6-074073 MFN155/EP573
S3	3/5/91	12:10 / 14:20		✓	[illegible]	1	✓	✓	6-074079 MFN156/EP574
S4	3/5/91	19:30		✓	[illegible]	1	✓	✓	6-074081 MFN157/EP575
S5	3/5/91	09:22		✓	[illegible]	1	✓	✓	6-074085 MFN158/EP576
~~S6~~				✓	[illegible]	[illegible]	✓	✓	~~6-074089 MFN159/EP577~~
~~S7~~					[illegible]				~~6-074093 MFN160/EP578~~
W1	3/5/91	[illegible]		✓	Spring [illegible]	2	✓	✓	6-074167 GRKS 6-074168 GRKS MFN161
W2	3/5/91	[illegible]		✓	Stream [illegible]	2	✓	✓	6-074169 GRKS 6-074170 GRKS MFN162
W3	3/5/91	12:10		✓	Spring [illegible]	2	✓	✓	6-074182 GRKS 6-074183 GRKS MFN163
W4	3/5/91	[illegible]		✓	Stream [illegible]	2	✓	✓	6-074192 GRKS 6-074191 GRKS MFN164
W5	3/5/91	[illegible]		✓	North [illegible]	2	✓	✓	6-074200 GRKS 6-074199 GRKS MFN165
W6	3/5/91	[illegible]		✓	North [illegible]	2	✓	✓	6-074207 6-074208 GRKS MFN166

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[illegible]					
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)

Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks
				Federal Express Airbill # 6993364545

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APPENDIX C

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QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL PACKAGE TRACKING NUMBER 6993364464

87M 6993364464

SENDER'S COPY

Sender's Federal Express Account Number: 0792-5840-2

Date: 3/6/91

From (Your Name) Please Print: Michael Watson

Your Phone Number (Very Important): 214-742-6601

Company: ECOLOGY & ENVIRONMENT INC

Street Address: 1509 MAIN ST STE 1400

City: DALLAS State: TX ZIP Required: 75201

To (Recipient's Name) Please Print: Robin Faulkingham

Recipient's Phone Number (Very Important): 207 278-1666

Company: (JORDAN) E.C. Jordan

340 County Road #5 04092

City: West Brook State: ME ZIP Required: 04092

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.): FAR0274SAF

IF HOLD FOR PICK-UP, Print FEDEX Address Here

PAYMENT: 1 Bill Sender 2 Bill Recipient's FedEx Acct. No. 3 Bill 3rd Party FedEx Acct. No. 4 Bill Credit Card 5 Cash

SERVICES (Check only one box)

DELIVERY AND SPECIAL HANDLING

Packages: 1 Weight: 88

Total: 1 88

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Federal Express Use: Base Charges, Declared Value Charge, Other 1, Other 2, Total Charges

014

FedEx Emp. No. 49959 3/6/91 1400

4

5

7

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USE THIS AIRBILL FOR DOMESTIC SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE TRACKING NUMBER 6993364453

6993364453

SENDER'S COPY

Sender's Federal Express Account Number: 0752-5840-2
Date: 3/6/91

From (Your Name) Please Print
Phone Number: 214-748-6001
Company: ECOLOGY & ENVIRONMENT INC
Street Address: 1509 MAIN ST STE 1400
City: DALLAS State: TX ZIP Required: 75201

To (Recipient's Name) Please Print: Richard W. Schottler
Recipient's Phone Number: (303) 278-1868
Company: National Resources Laboratory
Street Address: 409 Corporate Circle
City: Golden, State: Co ZIP Required: 80401

YOUR INTERNAL BILLING REFERENCE INFORMATION: FA R0274-SAF

PAYMENT: 1 [x] Bill Sender

SERVICES: 11 [x] Priority Overnight — FedEx Packaging

DELIVERY AND SPECIAL HANDLING: 2 [x] DELIVER WEEKDAY

Packages: 1 Weight: 44
Total: 1 Total: 44

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Form 014

FedEx Emp. No. 40955 3/6/91 135

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FEDERAL EXPRESS

Houston

QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL PACKAGE TRACKING NUMBER 6993364523

07M 6993364523

SENDER'S COPY

Sender's Federal Express Account Number: 0752-5840-2

Date: 3/5/91

From (Your Name) Please Print: Mike Watson

Your Phone Number (Very Important): 214-742-6603

Company: ECOLOGY & ENVIRONMENT INC

Street Address: 1509 MAIN ST STE 1400

City: DALLAS State: TX ZIP Required: 75201

To (Recipient's Name) Please Print: Lisa Feldman

Recipient's Phone Number (Very Important): (713)983 2100

Company: USEPA Houston Lab

Exact Street Address: 10625 Fallstone Rd

City: Houston State: TX ZIP Required: 77099

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.): FA [illegible] 745AF

PAYMENT: 1 Bill Sender 2 Bill Recipient's FedEx Acct. No. 3 Bill 3rd Party FedEx Acct. No. 4 Bill Credit Card

SERVICES (Check only one box)

DELIVERY AND SPECIAL HANDLING

2 DELIVER WEEKDAY

Packages: 1 Weight: 57

Total: 2/53

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

FORMAT 014

SENDER'S COPY

9 6 4

SENDER'S COPY

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL
PACKAGE TRACKING NUMBER 6993364545

87M 6993364545

SENDER'S COPY

Sender's Federal Express Account Number: 0752-5640-2

Your Phone Number: 214-743-6601

Company: ECOLOGY & ENVIRONMENT INC

Street Address: 1509 MAIN ST STE 1400

City: DALLAS State: TX ZIP Required: 75201

To (Recipient's Name) Please Print: ... W. ...

Company: National ... Laboratory

Exact Street Address: 409 Corporate Circle

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.)

IF HOLD FOR PICK-UP, Print FEDEX Address Here

PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash

SERVICES (Check only one box)

DELIVERY AND SPECIAL HANDLING

1 [ ] HOLD FOR PICK-UP
2 [ ] DELIVER WEEKDAY
3 [ ] DELIVER SATURDAY
4 [ ] DANGEROUS GOODS
5 [ ] CONSTANT SURVEILLANCE SVC. (CSS)
6 [ ] DRY ICE
7 [ ] OTHER SPECIAL SERVICE
9 [ ] SATURDAY PICK-UP
12 [ ] HOLIDAY DELIVERY

Weight: 165

Total: 165

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

Release Signature

3-5 1740

014

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FEDERAL EXPRESS MULTIPLE PACKAGE SHIPMENT LABELS

SHIPMENT DATE 3-5-91

MASTER AIRBILL NUMBER 6993364534

2 of 3 7541906057

DESCRIPTION

3 of 3 7541906066

DESCRIPTION

OF 7541906075

DESCRIPTION

OF 7541906084

DESCRIPTION

OF 7541906093

DESCRIPTION

SENDER'S COPY

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL PACKAGE TRACKING NUMBER 6993364534

SENDER'S COPY

Sender's Federal Express Account Number: 0752-5640-2

Date: 3/5/91

From (Your Name): Mike Watson

Your Phone Number: 214-748-4661

Company: ECOLOGY & ENVIRONMENT INC

Street Address: 2509 MAIN ST STE 1400

City: DALLAS State: TX ZIP: 75201

To (Recipient's Name): Adam Faulkingham

Company: E&E Jordan (JORDAN)

YOUR INTERNAL BILLING REFERENCE INFORMATION: FA...

PAYMENT: 1 Bill Sender

SERVICES

DELIVERY AND SPECIAL HANDLING

Packages	Weight
1	74
1	76
1	64
Total 3	Total 214

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Date/Time 3-5 1710

FEDERAL EXPRESS
MULT
SHIP

SHIPMENT DATE	3-5
MASTER AIRBILL NUMBER	6993
22 OF	7541
DESCRIPTION	
OF	7541
DESCRIPTION	
OF	7541
DESCRIPTION	
OF	75419
DESCRIPTION	
OF	75419
DESCRIPTION	

SENDER'S COPY

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE

AIRBILL
PACKAGE
TRACKING NUMBER
6993364442

87M 6993364442

SENDER'S COPY

Sender's Federal Express Account Number: 0752-9840-2
Date: 3/6/91

From (Your Name) Please Print: Michael Watson
Your Phone Number (Very Important): 214-742-6601
Company: ECOLOGY & ENVIRONMENT INC
Street Address: 1509 MAIN ST STE 1400
City: DALLAS State: TX ZIP Required: 75201

To (Recipient's Name) Please Print: Lisa Feldman
Recipient's Phone Number: (713) 983-2140
Company: EPA Houston Lab
Exact Street Address: 10625 Fallstone Rd
City: Houston State: TX ZIP Required: 77099

YOUR INTERNAL BILLING REFERENCE INFORMATION (First 24 characters will appear on invoice.): FAR0274-5AF

PAYMENT: 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash

SERVICES (Check only one box): 11 [X] YOUR PACKAGING

DELIVERY AND SPECIAL HANDLING: 2 [X] DELIVER WEEKDAY

Packages: 1 Weight: 55
Total: 1 Total: 55

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

014

FedEx Emp. No. 15959 3/6/91 1355

REFERENCE 1

ecology and environment, inc.
1509 MAIN STREET, DALLAS, TEXAS 75201, TEL. 214-742-6601
International Specialists in the Environment

M E M O R A N D U M

TO: Ed Sierra, Region VI RPO

THRU: K. H. Malone, Jr., FITOM

FROM: Kurt Soutendijk, FIT Chemist

DATE: October 31, 1990 **TDD:** F06-9009-14 **PAN:** FAR0274PAA

SUBJECT: Preliminary Assessment Report
Cabot Landfill
Cabot, Lonoke County, AR
(ARD983269275)

Attached is the Preliminary Assessment Report of Cabot Landfill.

PRELIMINARY ASSESSMENT

of

CABOT LANDFILL

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2.2 KNOWN AND POTENTIAL PROBLEMS	1
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FIGURES

Figure	Title
1	Site Location Map

1. SITE INFORMATION

The Ecology and Environment, Inc. (E & E) Region VI Field Investigation Team (FIT) was tasked by the U. S. Environmental Protection Agency (EPA) under Technical Directive Document (TDD) F06-9009-14 to conduct the Preliminary Assessment (PA) of the Cabot Landfill (ARD983269275) in Cabot, Lonoke County, Arkansas.

1.1 SITE LOCATION

The Cabot Landfill is located 1/4 mile west of the north end of Willie Ray Road, approximately 1 1/2 miles north of Cabot's community building, in Cabot, Lonoke County, Arkansas (Ref. 1). The legal description of the landfill property is Lot 1, Lot 2 and the southwest quarter of Lot 5 of Section 6, Township 4 North, Range 9 West (Ref. 2). The geographical coordinates are 34°59'45" north latitude and 92°01'00" west longitude (Figure 1).

1.2 SITE BACKGROUND

The site was purchased by the City of Cabot for use as a municipal landfill (Ref. 2; Ref. 3). The area of the site is 118.25 acres (Ref. 2). The State permitted 6.4 acres for landfill use in 1975 and approved an additional 8.5 acres in 1981 (Ref. 5; Ref. 6; Ref. 7; Ref. 8). A state inspection (June 24, 1980) found that the landfill had extended beyond its permitted or approved boundaries (Ref. 9, p. 4). The actual size of the landfill is not known.

2. BACKGROUND AND OPERATING HISTORY

The site's history, known and potential problems and regulatory involvement are addressed in this section.

2.1 SITE HISTORY

The landfill was primarily used for the disposal of domestic, commercial and institutional wastes (Ref. 10, p. 2). Wastes disposed at the site were to be covered daily with six inches of compacted soil. A final cover (two feet of compacted soil and four inches of topsoil) was to be applied and seeded at closure (Ref. 10, pp. 7, 8). The landfill was 75% closed by December 22, 1986. Final closure was scheduled for September 15, 1987 by the Arkansas Department of Pollution Control and Ecology (ADPC&E) (Ref. 11).

2.2 KNOWN AND POTENTIAL PROBLEMS

The Cabot Landfill was cited by the State for exceeding permitted boundaries, leachate problems and overall poor conditions (Ref. 12). A state inspection on February 19, 1981 revealed 34 55-gallon drums.

The majority of the drums were labeled paint stripper. Several drums were bulging at the ends. The shipping address for the drums was Falcon Jet of Little Rock.

Reviewed by 6H-ES
Date 11/15/
6H-MA

PRELIMINARY REPORT
This does not constitute final opinion of EPA

There was one drum labeled Dreamline Manufacturing, Cabot, Arkansas. The drum was labeled lacquer sealer and had been burned. Two drums of Penvalt E-Z-Strip were resting on their sides and leaking. There was also one drum of adhesive that had been leaking (Ref. 13).

A resident near the landfill stated that there is an abandoned well beneath the landfill. He also claims that there are springs located in the landfill. A state agent suspected that this was the cause of the leachate problem (Ref. 14; Ref. 15).

2.3 REGULATORY INVOLVEMENT

The ADPC&E has been involved in permitting the landfill and in inspecting for proper maintenance and operation (Ref. 3; Ref. 9).

3. PATHWAY CHARACTERISTICS

The ground water, surface water, soil exposure and air pathway characteristics are addressed in this section.

3.1 GROUND WATER

Water for domestic wells is found in the Tertiary deposits. This group is sandy clays with channel fillings of clean sand. The clean sands are an important source of domestic water. In the area of the landfill, there is a surficial strata of clay approximately 80 feet deep (Ref. 17).

3.2 SURFACE WATER

Leachate from the landfill could enter Four Mile Creek. The creek runs adjacent to the landfill and travels through an unpopulated area (Ref. 18).

3.3 SOIL EXPOSURE

The location of the landfill is remote but there are nearby residents and the landfill is not fenced or guarded (Attachment A) (Ref. 18).

3.4 AIR

Closure has been completed on the landfill. It has been completely covered and seeded to prevent erosion (Ref. 10, pp. 8-10; Ref. 11; Ref. 12).

4. TARGETS

The ground water, surface water, soil exposure and air targets are addressed in this section.

4.1 GROUND WATER

The City of Cabot obtains its drinking water from three wells located outside the four mile target distance (Ref. 18; Ref. 19). A permit application summary states that there are five residents within 1/2 mile of the site who are all on city water. However, a Record of Communication from a nearby resident states that he is using well water (Ref. 14; Ref. 15). It is not known how many people within the target distance use well water for drinking purposes.

4.2 SURFACE WATER

Leachate could enter Four Mile Creek. It is an intermittent stream and is most likely not used for drinking or irrigation purposes. It travels through a sparsely populated area. However, Cabot is in the Arkansas dairy land (Ref. 20), and it is possible that the creek travels through farm land. Therefore, cows may drink from the creek (Ref. 18).

4.3 SOIL EXPOSURE

The location of the landfill is remote but there are nearby residents and the landfill is not fenced or guarded (Attachment A) (Ref. 18). The nearest resident is 1,000 feet from the site (Ref. 20, p. 2).

4.4 AIR

Closure has been completed on the landfill. It has been completely covered and seeded to prevent erosion (Ref. 10, pp. 8, 9; Ref. 11; Ref. 12). It is not known if there are any sensitive environments within the four mile target distance.

5. CONCLUSIONS

The Cabot Landfill was permitted and approved by the State to operate on 14.9 acres (Ref. 5; Ref. 6; Ref. 7; Ref. 8). A state inspection (June 6, 1980) revealed that the landfill exceeded its permitted boundaries and was operated poorly (Ref. 9, p. 4). Hazardous waste have been disposed at the landfill (Ref. 13).

The City of Cabot receives its water from wells outside the target distance (Ref. 18; Ref. 19). It is not known how many people within the target distance use well water for drinking purposes. The landfill has been closed and seeded (Ref. 10, p. 8-10; Ref. 11; Ref. 12).

REFERENCES

1 Pre-Application Solid Waste Disposal Permit. Prepared by The City of Cabot, Arkansas. September 19, 1990.

2 Rural Real Estate Record Card. County Tax Assessors Office, Lonoke, Arkansas.

3 Application for Approval of Sanitary Landfill Site. Prepared by City of Cabot, Arkansas. December 6, 1977.

4 Letter. Cabot Landfill. From: Ms. Jodie Marler, Administrative Assistant, Solid Waste Control Division, Arkansas Department of Pollution Control and Ecology. To: Willie Ray, Mayor, City of Cabot. March 20, 1978.

5 Letter. Cabot Landfill. From: Ray Hightower, Chief, Solid Waste Control Division, Arkansas Department of Pollution Control and Ecology. To: Willie P. Ray, Mayor, City of Cabot. July 2, 1975.

6 Engineering Plan Map for Proposed Sanitary Landfill for Cabot, Arkansas. April 2, 1973.

7 Application Solid Waste Disposal Permit. Prepared by City of Cabot Supply Agency. December 5, 1980.

8 Permit Application Summary. Prepared by Arkansas Department of Pollution Control and Ecology. March 16, 1981.

9 Arkansas Department of Pollution Control and Ecology. Sanitary Landfill Evaluations. June 6, 1980; February 18, 1981; March 12, 1981; November 2, 1981; April 16, 1984; May 30, 1984; November 29, 1984; March 11, 1985; April 11, 1985; April 26, 1985; June 12, 1985; July 12, 1985; September 11, 1985; October 28, 1985.

10 Letter. Sanitary Landfill Summary. From: Glen P. Clements, Mayor, City of Cabot. To: Arkansas Department of Pollution Control and Ecology. April 14, 1981.

11 Letter. Cabot Landfill. From: Jim Bearden, Arkansas Department of Pollution Control and Ecology. To: M.E. Smith, Mayor, City of Cabot. January 6, 1987.

12 Letter. Cabot Landfill. From: S. K. McMullen, Field Inspector, Arkansas Department of Pollution Control and Ecology. To: W. E. Smith, Mayor, City of Cabot. April 12, 1985.

13 Memorandum. Drums of Hazardous Material at Cabot Sanitary Landfill. From: Mike Bates, Hazardous Waste Inspector, Arkansas Department of Pollution Control and Ecology. To: Doyce Hughes, Inspector Supervisor Hazardous Waste, Arkansas Department of Pollution Control and Ecology.

14 Record of Communication. Well Located on Cabot Sanitary Landfill. From: Richard McDuffee, Arkansas Department of Pollution Control and Ecology. To: Cabot Files. August 6, 1979. ARD983269275.

15 Record of Communication. Well Located on Cabot Sanitary Landfill. From: Richard McDuffee, Arkansas Department of Pollution Control and Ecology. To: Cabot Files. August 13, 1979. ARD983269275.

16 Counts, Halan B. Ground Water Resources of Parts of Lonoke, Prairie, and White Counties, Arkansas. Arkansas Geological and Conservation Commission. Arkansas, 1957.

17 Well Logs. Arkansas Geological Commission.

18 U.S.G.S. 7.5 Minute Series Topographical Map. Mountain Springs, Arkansas 1963. Beebee, Arkansas 1963. Cabot, Arkansas 1954. Oak Grove, Arkansas 1982.

19 Record of Communication. Water Supply for the City of Cabot. From: Kurt Soutendijk, FIT Chemist, Ecology and Environment, Inc. To: Rodney Cabot, Cabot Water Department. October 16, 1990 ARD9832679275.

20 Letter. Cabot Landfill. From: Willie Ray, Mayor, City of Cabot. To: Arkansas Department of Pollution Control and Ecology. July 14, 1977.

Photo No. ____

Photographer/Witness [illegible]
Date [illegible] Time [illegible] Direction West
Description [illegible]

No. ____

Photographer/Witness [illegible]
Date [illegible] Time [illegible] Direction West
Description [illegible] Dump

Photo No. ____

Photographer/Witness [illegible]

Date [illegible] Time [illegible] Direction [illegible]

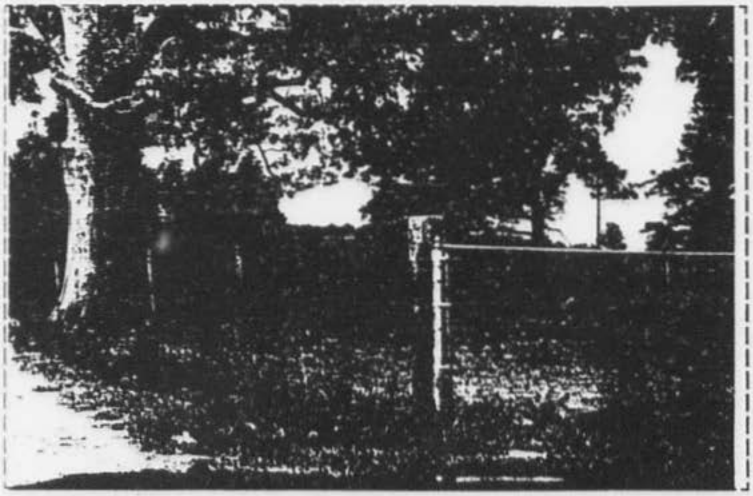
Description [illegible]

Site Name: [illegible]

Location: [illegible]

CERCLIS #: [illegible]

Photo No. ____



Photographer/Witness [illegible]

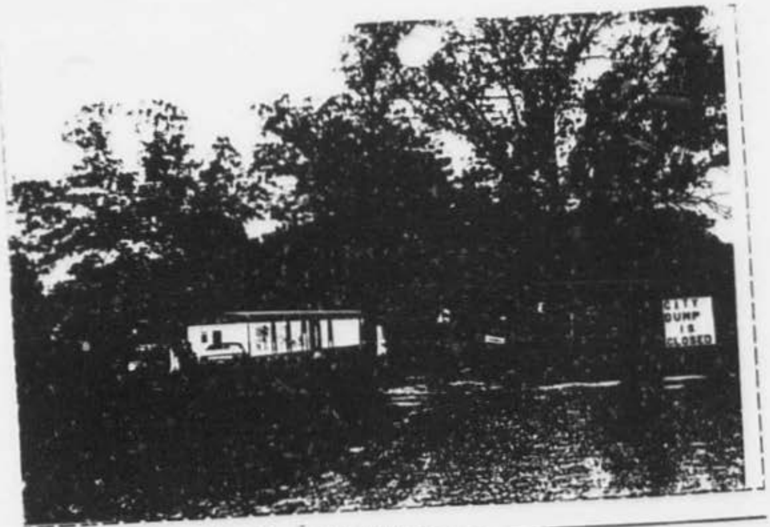
Date [illegible]-90 Time [illegible] Direction Northwest

Description [illegible]

Page ____

Of ____

Photo No.



Site Name:

Location:

CERCLIS #:

Photographer/Witness

Date ______ Time ______ Direction ______

Description

Photo No.

Photographer/Witness

Date 10-3-90 Time 12:30 Direction ______

Description

Page ______

Of ______

REFERENCE 2

Revised 6/13/75

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

APPLICATION FOR APPROVAL OF
SANITARY LANDFILL SITE

The undersigned proposes to construct and operate a sanitary landfill for disposal of solid wastes. A permit will be issued following approved engineering design and methods of operation.

RECEIVED 1977

1. Name of proposed sanitary landfill Cabot Landfill
   General location Adjacent to Present landfill just North of City limit
2. Applicant's name City of Cabot
   Phone No. 843-3566
   Address P. O. Box 597, Cabot, Arkansas 72023
3. Property owner's name To be acquired by City
   Phone No. 843-3566
   Land is to be leased ____, rented ____, owned X (check one)
4. Responsible authority for operation Willie Ray, Mayor
5. Area and/or towns served Cabot, Ward, Austin and surrounding area
6. Total population served (if residential waste landfill) Estimate 12,000
7. Legal description of site Lots 1,2, & 5 in the SW¼ of Section 6; T4N; R9W; Lonoke County, Arkansas containing 120 Acres (Less 2 Acres in Lot 5 with house & barn)
8. Total area of site to be used as a sanitary landfill Approximately 100 acres
9. Character of site (hillside, gully, flat land, etc. Rolling
10. Present land use surrounding site Pasture and Woodland
11. Distance from nearest public road abuts present landfill road and nature of access road present or planned All-weather gravel road and plan to pave
12. Distance to nearest residence adjacent to three residences
13. Distance to nearest water supply well At least one-half mile

14. Distance to nearest lake or stream Intersects

Name Four Mile Creek and One Tributary

15. Topographic map indicating the exact boundaries of the proposed site and location of nearest water wells to the site (attach copy). A USGS Quadrangle map is desirable and can be obtained for 75¢ from:

Arkansas Geological Commission
3815 West Roosevelt Road
Little Rock, Arkansas 72204

16. Soil profile description, including depth of soil, wetness, permeability, and texture. Include a statement about any evident limitations or hazards such as flooding, character of bedrock if known, permeable substrate or other factor. This information should be obtained from the Soil Conservation Service or other reliable source. (Attach copy of report.)

17. Depth of minimum water table Unknown feet. Determined by ______ (Responsible authority).

18. Type of operation: Trench fill x Area fill ____ or combination ____.

19. Types, quantities, and sources of materials to be disposed of:

TYPE	QUANTITY (Est.%)	SOURCE
Residential	75%	Households
Commercial	10%	Downtown Retail Businesses
Industrial	15%	A trailer factory, furniture factory, and garment factory
Other		

20. Description of any industrial and/or hazardous wastes to be disposed of at site None

21. Zoning regulations restricting use of the site None

22. Procedures for prevention of unauthorized use of the site
Will be fenced and have locked gate

23. The proposed use of the site upon termination of the disposal operation
City Park

24. Type collection service provided or planned City pickup service and individuals

25. What city/county ordinances control solid waste collection/disposal in your area? Cabot has a City Ordinance on collection and disposal of Solid Waste.

26. REMARKS We need to get your approval of this site. If the site meets your approval, it will be secured by purchase or condemmation from present owner.

NAME OF APPLICANT City of Cabot
SIGNATURE Willie Ray
TITLE Mayor
DATE December 6, 1977

REFERENCE 3

SANITARY LANDFILL STUDY

FOR

CABOT, ARKANSAS

SANITARY LANDFILL
FOR
CABOT, ARKANSAS

This application for a Solid Waste Disposal Permit is for the expansion of an existing sanitary landfill owned by the City of Cabot. Cabot has operated this landfill since September of 1975. Most of the environmental and site characteristics are the same for the planned expansion as the original landfill. The following narrative describes the pertinent site features and a general description proposed for this expansion.

1. Proposed Site

1.1. Location: The proposed expansion is immediately north of the existing landfill which is 1½ miles north of downtown Cabot. The site is more particularly described as being in the SW¼ of Section 6, T-4-N, R-9-W of Lonoke County.

1.2. Topography: The site has two distinct areas of differing topography. The southern one-half of the site is characterized by a sloped terrain with an approximate ten per cent slope from southwest to northeast. The remainder of the site is generally flat.

1.3. Site Drainage: The drainage pattern for this site is toward the northeast and to the northwest, both into a small tributary of Four Mile Creek. A buffer area adjacent to this tributary stream is provided to contain leachate from the landfill. Diversion ditching should be provided as shown on the Plans and as necessary to prevent ponding across the newly completed areas of the landfill. Proper construction of levee sections will also assist in diversion of water from the site.

1.4. Soil Characteristics: Soils in the upper four feet are silty clays with varying amounts of stone. These clays have poor to fair drainage characteristics. The lower five feet of soils strata are heavy clays with calcareous shale with very low permeability. These heavier clays should be utilized for final cover material so as not to prevent percolation from fill sections into the lower trenched sections. No groundwater was encountered in the test pits.

2. Service Area

2.1. The landfill is expected to receive wastes from domestic, commercial, institutional, industrial and public establishments in Cabot, and minor reaches of surrounding development.

2.2. <u>Population Served</u>: The population equivalent is estimated at 5,500 to 6,000 people for the anticipated life of the landfill.

2.3. <u>Method of Service</u>: The City of Cabot owns and maintains packer-type collection trucks with mechanical means of discharging wastes. Weekly collections are made throughout the service area.

3. Landfill Description

This expansion has the advantages of well maintained access and site entrance roads. All features of the site and its surrounding area are identical to the original landfill site.

4. Site Improvements

4.1. <u>Access to Site</u>: The existing site entrance road shall be extended with side ditching and culverts as required to provide access to the proposed site. The road should be well compacted with crushed stone added to assure an all-weather traffic surface. It is anticipated that the road will be extended as the landfill is developed unless the operator wishes to utilize the "dry weather" area so designated on the plans: in which case, the road must be extended to this area.

4.2. Access to [illegible]ping Areas:

As the development of the site progresses temporary roadwork will be required to provide convenient traffic routing to the dumping areas. When these are no longer needed, each should be graded out and any culvert salvaged and reused.

4.3. Clearing and Grubbing:

[illegible] is new site will require only minor clearing as the development progresses. Any area intended for borrow fill material will obviously also require clearing prior to use. All topsoil material should be stockpiled throughout the life of the landfill for later use.

5. Method of Constructing Landfill

The present methods of construction will continue. This consists of first trenching for burial of wastes followed by filling of wastes over the compacted burial refuse.

5.1. Progression of Development:

The individual areas shall be developed from north to south by construction of a levee to facilitate the area filling procedure. The development will begin with Area "A" and continue alphabetically; except, Area "E" should be utilized only during dry weather to avoid problems such as stuck vehicles and groundwater in trenches. A cell shall extend the complete length of the particular area before beginning the next cell.

5.1.1. Trenching:

Excavated material from the first cell of a particular "Area" should be used to construct the levee section.
The trench should be constructed such that all water from rainfall or groundwater drains away from the work area.

Generally, filling of trenches with refuse should progress from west to east in areas A through D and south to north for Area E.

Cover material can be obtained from the next cell as trenching progresses.

5.1.2. Filling:

Filling operations can begin when a trench has been completely filled with refuse. As the following cell is being trenched, the excavated material is used for daily cover and final cover for the fill section of the preceding cell.

Filling operations should progress in reverse direction from the trenching operation so as to take advantage of the compacted trench areas for vehicle traffic.

5.1.3. Final Cover:

Following filling methods and final cover of the cell, a four-inch cover of topsoil should be added for a total compacted thickness of 24 inches. Seeding of the topsoil should also be provided immediately following placement of topsoil.

6. Traffic Flow and Unloading

Traffic will travel on the site access roads bi-directionally. Signs for direction will need to be posted or a fee clerk shall be stationed at the main entrance for collection and directions. No major problems have arisen at the existing site relating to traffic flow or dumping.

but particular attention should be given to any vehicles which require manual unloading to prevent disruption of traffic.

7. Handling and Compacting Various Wastes:

7.1. General Refuse:

The general type refuse wastes are usually made up of such heteroggeneous mixtures of materials as paper, cans, bottles, cardboard, wooden boxes, plastics, lumber, metals, yard clippings, food wastes, rocks, soil, leaves, brush, etc. These types of refuse can be readily compressed and crushed under relatively low pressure when individually exposed to the direct impact of compaction equipment. However, when these items are combined and/or make up the mass of the solid waste they often bridge or act as a cushion, thus protecting the relatively low strength materials from being crushed under the load of the equipment.

To reduce this cushioning and bridging effect and to attain a greater volume reduction at the Cabot landfill, all refuse deposited in the general refuse area shall be spread in layers less than two (2) feet deep and then tracked over the entire width of each layer with the spreading equipment at least three times.

Solid waste that contains a high percentage of brush, leaves and yard clippings will require the expenditure of more compactive efforts. Should entire loads of such items be received at the landfill site, they shall be spread and compacted near the bottom of a cell and less resilient waste placed and compacted on top.

The equipment operator at the Cabot sanitary landfill shall maintain the working face at a slope of no greater than 3:1. Waste shall be deposited at the toe of all work faces (either by directly unloading there or moved to the toe by spreading equipment) and then spread by pushing up the slope. With waste spread against the slope in this manner and the machine moved up and down, it will thus tear and compact the waste and eliminate voids. The equipment operator should make passes until he no longer can detect that the surface of the waste is being depressed more than it is rebounding. The compacted density of the refuse making up the General Refuse Disposal Area shall be a minimum of 800 lbs/cubic yard.

7.2. Bulky Refuse:

Bulky wastes include such items as car bodies, demolition and construction debris, large appliances, furniture, etc. Such items so deemed to be bulky and/or difficult to reduce in volume shall be disposed of as outlined herein.

Significant volume reduction of construction rubble, stumps and timbers cannot be achieved, but car bodies, furniture, and appliances can be significantly reduced in volume. Such reduction or compaction shall be achieved by placing the items on solid ground and rolling over then with the heavy landfill equipment. Compacted items should be deposited at the bottom of the trenches.

Selected loads of demolition and construction debris- broken concrete, asphalt, bricks, and plaster- shall be stockpiled and used to build on-site (temporary) roads.

Should a load of construction debris predominately made up of stumps and timber be delivered to the landfill site, it should be routed to the borrow pit area and unloaded for disposal within the pit along with the debris resulting from clearing and grubbing of the Cabot landfill site.

Even though bulky wastes do not usually contain putrescibles, they are to be covered with a thin layer of soil at the end of each operating day to eliminate harborage for rats and other pests.

8. Wastes Not Accepted:

The following is a general description of materials that require special handling for their disposal and shall not be accepted at the Cabot Sanitary Landfill unless written approval has been obtained from the Department of Pollution Control & Ecology of the State of Arkansas.

The wastes are, but not limited to: Sewage solids or liquids, septic tank pumpings, and other liquids, semi-liquids; large dead animals, such as horses, cows, etc.; or hazardous substances and materials, such as infectious or pathogenic hospital wastes, biological wastes, radioactive materials; dye concentrates; waste chemicals; highly flammable or volatic substances; unexpended pesticide containers; pesticides; raw animal manure or explosives.

9. Placement of Cover Material:

9.1. <u>Daily Cover</u>:

A minimum 6-inch compacted thickness of soil will be placed over the daily refuse deposits of Phase I and Phase II of the Cabot Sanitary Landfill. In Phase II the 6-inch daily cover shall be applied to the side slopes (end faces) and the 2-ft. final cover to the top as construction of the cell progresses, thus leaving only the working face exposed. The working face shall be covered with a minimum 6-inch compacted thickness of soil at the end of each operating day.

9.2. <u>Intermediate Cover</u>:

A 1-foot compacted depth of intermediate cover, or what could actually be termed as the final cover, for Phase I operations shall be placed on top of the refuse as the work face progresses along the trench length, leaving only the work face exposed. The work face shall be covered at the close of each day's operation with a 6-inch compacted thickness of soil.

Periodic grading and compacting of the intermediate cover will be necessary to repair erosion damage and to prevent ponding of water. Cracks and depressions that develop due to moisture loss and settlement of the fill shall be repaired frequently.

9.3. Final Cover:

Final cover over the General Refuse Area of the Cabot Sanitary Landfill shall be a 2-foot minimum compacted thickness of soil, with the top 4 inches being made up of the topsoil stripped from the site and stockpiled. The 4-inch thickness of topsoil shall not be highly compacted as it is to receive seeding. Application of the final cover shall be advanced as the fill sections are completed.

Based on soil investigations performed at the Cabot Sanitary Landfill site, it is recommended that soil excavated between 0 and 48- inches deep in the trenches and borrow pit be used to satisfy the volume of daily and intermediate cover material required during each year's operation. Further, the soil excavated from these areas between 48- inches and 84+- inches shall be reserved for use as final cover material.

10. Operations During Inclement Weather:

The two major weather conditions which cause difficulties at a landfill are precipitation and extreme cold.

10.1. Extreme Cold:

During extended periods of sub-freezing weather, frozen soil is not suitable for covering, nor should attempts be made to compact frozen material.

10.2. Rainfall:

Heavy rainfall must be continually and adequately diverted. Diversion ditches and/or terraces can be extremely useful in preventing excessive amounts of water from entering the trenches.

The terraces can be graded when each is no longer needed and utilized as cover material.

10.3. The northern sector of the landfill, Area "E" is to be reserved for dry weather use only. Careful attention must be directed to area drainage when using Area "D" to maintain roads and divert water.

Weather conditions cause maintenance problems for the construction of the landfill and access to the landfill. Added surface materials will likely be required and much grading and reshaping of roadbeds.

10.4. Levees:

The levees which divide the "areas" are intended to provide a working fill section, and once the "area" is completely developed, will assist in diversion of rainfall runoff.

11. Fire Control:

It is recommended that a mobile unit of the city's two-way radio system be established at the Cabot sanitary landfill site for direct contact with the City's Fire Department in case of fire. Also, all equipment operators shall keep a fire extinguisher on their machine at all times for extinguishing small fires.

All landfill personnel shall be briefed on fire-fighting procedures and use of the two-way radio system for contacting the City Fire Department. No burning of wastes shall be allowed at the Cabot Sanitary Landfill.

Equipment fuels shall be properly stored in satisfactory containers in the vicinity of the equipment storage building.

12. Litter Control:

12.1. It shall be the daily responsibility of all employees of the Cabot sanitary landfill to police all loose paper and other light articles of refuse from the site and along access roads leading to the compound. These collected articles shall be deposited on the work face before the day's operations area is covered.

12.2. Fencing and bushy, wooded areas should be kept as each now exists as long as possible to possibly catch lose papers, and prevent unsightly conditions.

13. Salvage and Scavenging:

There shall be no salvaging, sorting, or scavenging of any wastes delivered to the Cabot sanitary landfill.

14. Completed Landfill:

14.1. Settlement:

Completed sanitary landfills will settle as a result of waste decomposition, filtering of fines, superimposed loads, and its own weight. Bridging that occurs during construction produces voids. As the waste decomposes, fine particles from the cover material and overlying solid waste often sift into these voids. The weight of the overhead and cover material helps consolidate the fill, and this development is furthered when more cover material is added or roadways are constructed on the fill.

Settlement can produce wide cracks in the cover material that exposes the wastes to rats and flies, allow water to infiltrate, and permit gas to escape. Differential settling may form depressions that permit water to pond and infiltrate the fill. Because every landfill settles, its surface must be periodically inspected and soil should be added and graded when necessary.

The Cabot sanitary landfill shall be repaired of all cracks, erosion and uneven settlement of the final cover during the first two years following completion of the fill.

14.2. Use:

There are many ways in which a completed sanitary landfill can be used. It can, for example, be converted into a green area or be designed for recreational, agricultrual, or light construction purposes.

It is recommended that the completed Cabot sanitary landfill be used as a green area. The completed landfill shall be seeded and turf established as herein described.

Turf shall be established on the final cover of each year's operation, all side slopes, terraces and, in general, on all areas disturbed during construction of the sanitary landfill; less and excepting the all-weather access road and borrow pit area. Establishment of turf on the final cover area of each year's operation shall be as soon as possible after completion of each year's Phase II operation.

The upper four (4) inches of the two (2) foot final cover shall be topsoil as stripped from the site during initial clearing and grubbing operations. Topsoil shall be applied to the surface of all areas to be seeded to a compacted thickness of 4-inches.

After topsoiling, areas to be seeded shall be dressed to the shape and section shown on the Plans and thoroughly pulverized by disk harrows or other approved means to a depth of not less than two (2) inches. All sticks, debris, and other foreign matter must be removed and the soil left in a suitable condition to receive seed.

Fertilizer shall be applied to the areas that are to receive seed at the rate of 600 pounds per acre. Fertilizer shall be drilled into the soil or broadcast over the area and incorporated during the pulverization, but distribution must be uniform.

Sowing of seed may be by mechanical hand seeders or by approved power equipment. Either method must give uniform distribution and no seeding will be permitted during a high wind. For Bermuda seedings the area shall be firmed with a cultipacker immediately before and after seed are broadcast. For fescue seeding the area shall be firmed with a cultipacker immediately after the seed are broadcast on top of the soil.

Where seed and fertilizer are drilled together, the rows shall not exceed 16 inches in width, and must be parallel to slopes. The seed and fertilizer may be drilled from separate containers, or from one container if properly mixed. Seed and complete solid fertilizer shall not be mixed for more than 12 hours prior to seeding, except on areas where straight nitrogen fertilizer is used, the seed and fertilizer may be broadcast separately or may be drilled simultaneously in the same row from separate containers.

Kind of Seed	Planting Season	Seeding Rate
Tall Fescue (Ky. 31 or Alta)	Sept. 1-Oct. 15	30 Lb/Acre
Bermuda Grass (Cynodon dactylon)	April 1-June 15	10 Lb/Acre

The completed sanitary landfill shall be seeded in full accordance with the above schedule. If the various portions of the work are not finished at such time to allow immediate seeding, mulch shall be applied to the area and then return during the next planting season and seed and remulch the areas to be turfed, all in full accordance with this section of the Manual.

Bermuda seed shall be drilled on top of the soil. Fescue seed shall be drilled no more than 1/2- inch deep.

Immediately after seeding and cultipacking, straw mulch shall be applied at the rate of two (2) tons per acre, and may be spread by hand or by suitable equipment, and shall cover the entire seeded area. Where rains are likely to occur before completion, the straw covering shall be started at the upper part and shall continue uniformly until the area is completely covered. Material for mulching shall consist of threshed straw of oats, wheat, or rice. If the material is too long and brittle to properly secure to the surface of the soil, it shall be cut in an ensilage cutter or other equipment to lengths not exceeding eight (8) inches. Immediately following the spreading of the mulch material, it shall be anchored to the soil by means of a cultipacker, a disk harrow set to cut only slightly, a rotary hoe run backwards, or other equipment that will securely anchor the mulch and prevent it from floating or bunching by water or wind action. The number of passes over the material to secure it shall not exceed three (3) passes. Where slopes are such, or around structures where machinery cannot operate properly, the mulch material shall be spread uniformly by hand and secured by a shallow covering of earth, or cut into the ground at six inch intervals by means of a square point shovel.

After seeding is complete, the seeded area shall be kept thoroughly watered until a sufficient growth of grass is evident on the surface of the ground. In the case of Bermuda, watering must continue until the grass has sufficient root structure to withstand dry weather. Watering shall preferably be done in the afternoon. Any area larger than two (2) square yards not showing evidence of a growth of grass shall be reseeded.

15. <u>Close-Out</u>:

The Cabot Sanitary landfill shall be inspected periodically and after its completion by the Department of Pollution Control & Ecology of the State of Arkansas to insure its proper operation. In order to provide future owners or users with information regarding the previous use of the site, the plot plan and a detailed description of any major deviations from the Plans shall be recorded with the County Clerk of Lonoke County, upon completion and acceptance of the landfill site.

16. <u>Available Equipment</u>:

Currently the existing landfill is being maintained with a track backhoe and a large dozer. The City of Cabot has a rubber-tired backhoe for emergency use only. Dump trucks owned by the City could be used for short durations to haul material. It is not known whether county owned vehicles or equipment is available for stand-by or emergency situations.

REFERENCE 4

STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 NATIONAL DRIVE
LITTLE ROCK, ARKANSAS 72209

501 371-1701 GEN. OFF.
501 371-1136 AIR DIV.

July 28, 1975

File

The Honorable
Willie P. Ray, Mayor
City Hall
Cabot, Arkansas 72023

Dear Mayor Ray:

At its last regular meeting on July 25, 1975, the Commission on Pollution Control and Ecology voted to grant a permit for the operation of a sanitary landfill to the City of Cabot.

The permit will be forwarded to you as soon as the necessary signatures have been obtained.

Sincerely,

Ray Hightower
Chief
Solid Waste Control Division

fc

Remarks:

I consider the site acceptable for sanitary landfill operations with the following suggestions and exceptions:

1. The fill operation should begin at the western most edge of the site trenching eastward down the slope. Drainage ditches should be employed to carry water roughly south to north.

2. The lower eastern end of the site should not be used as a trench fill due to a very high ground water table unless an area fill method is used with cover material hauled in.

3. Area 2 should not be used due to high water table and nearness to Four Mile Creek.

WB:cb

REFERENCE 5

11/15/77

#______

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 National Drive
Little Rock, Arkansas 72209
Solid Waste Control Division 371-2130

APPLICATION
SOLID WASTE DISPOSAL PERMIT
(Sanitary Landfill)

The undersigned is a registered professional engineer with the state of Arkansas. A permit will be issued following submission and approval of engineering plans and specifications in accordance with the Arkansas Solid Waste Disposal Code.

843-3566

1. Applicant's name City of Cabot Phone No. 982-8324

   Address P.O. Drawer AJ Cabot, Ar. 72023

2. Engineer's name Bill R. Staggs Phone No. ~~Same~~ KRIST 664-1552

   Address Same

3. Legal description and acreage Part of the SW¼ of Section 6 T-4-N, R-9-W

   Lonoke County acres 8.5 ±

4. Total area of site to be used as a sanitary landfill ______ acres.

5. Land is to be leased____, rented____, owned x . (If land is to be rented or leased, a copy of rental or lease agreement will be provided in narrative portion of plans.)

6. Present land use surrounding site None

7. Distance from nearest public road 1/4 mile and nature of access road present or planned existing gravel road extending to paved

8. Distance to nearest residence 3/4 mile

9. Distance to nearest water well 3/4 mile

10. Distance to nearest lake or stream______ Name______

11. Soil profile description, including depth of soil, wetness, permeability, and soil texture. Include a statement about any evident limitations or hazards such as flooding, character of bedrock, if known, permeable substrate or other factor. This information should be obtained from the Soil Conservation Service or other reliable source (attach copy of report).

12. Depth of minimum water table None encountered feet. Determined by Bill Staggs during digging of test holes. (responsible authority).

11/15/77

#_____

13. Type of operation: Trench fill ____ Area fill ____ or Combination X .

14. Types, quantities, and sources of materials to be disposed of:

Type	Quantity	Source
Residential/ Commercial	2/cu-yd/day	Typical Refuse
Industrial	8 cu-yd/day	Scrap material, containers, etc.
Other		

NOTE: No hazardous wastes, sewage solids or liquids, septic tank pumpings, or other liquids are allowed to be disposed of at a sanitary landfill without written approval from the Department. Any landfill intended for these wastes may required a special permit.

15. Procedures for prevention of unauthorized use of the site

Main gate is locked daily.

16. The proposed use of the site upon termination of the disposal operation

None at present

17. Type collection service provided or planned

City owned and operated weekly collection

18. What city/county ordinance control solid waste collection/disposal in the area served by the proposed landfill?

REMARKS:

NAME OF ENGINEER Bill R. Staggs TITLE

SIGNATURE Bill R. Staggs 5 Dec 77 DATE

SEAL

SOIL LOGS

DEPTH BELOW SURFACE (FT.)

PIT #1

0

0.5 — Topsoil

Tan Clay
w/ Boulders 6"⌀

3.0 —

Stiff Gray Clay w/ Red
Clay Seams, Fractured Sandstone.

4.5 —

Very Stiff Red Clay
w/ Gray Clay Seams

6.25 —

Very Stiff Reddish-Brown Clay
Some Gray Seams
Low Permeability, No Rocks

9.0 —

PIT #2

0.0 —

Topsoil

0.5 —

Tan Clay, No Stone

1.5 —

Stiff Red Clay
w/ Sandstone Fragments

3.0 —

Stiff Gray Clay
w/ Red Clay Seams

5.0 —

Stiff Red Clay
w/ Cementous Shale, Low Permeability

7.0 —

Stiff Dark Gray Clay
w/ Cementous Shale, Low Permeability

9.0 —

PIT #3

0

0.5 — Topsoil

Tan Clay, No Stones

3.0 —

Lt. Gray Clay w/ Red Clay Seams
Layered Sandstone.

4.5 —

Very Stiff Red Clay
w/ Sandstone Boulders

6.0. —

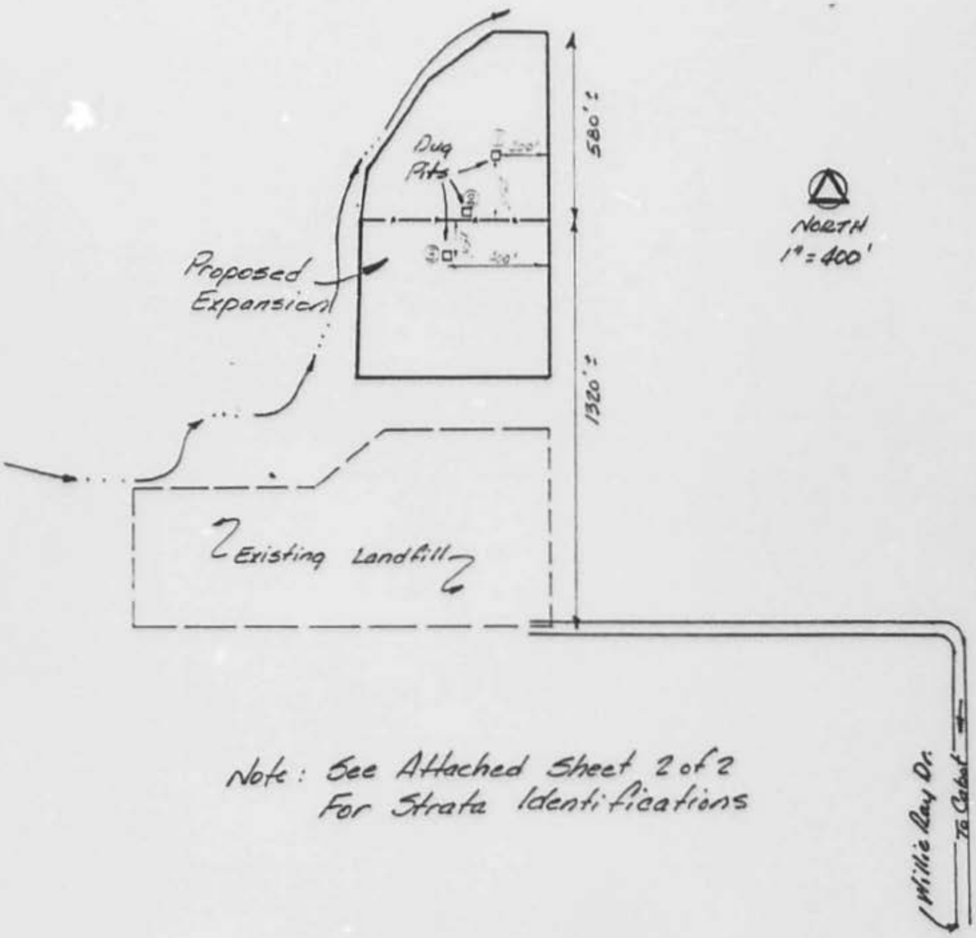
Red to Dark Gray Stiff Clays
Cementous Shale Seams
Low Permeability

9.5 —

CABOT SANITARY LANDFILL

SOILS LOG

9



Note: See Attached Sheet 2 of 2
For Strata Identifications

CABOT SANITARY
LANDFILL
SOILS LOG - PLAN

(4)

REFERENCE 6

FORM # 7/7/78

PERMIT APPLICATION SUMMARY

1. Name of Applicant City of Cabot Address P.O. Drawer AD Cabot, Arkansas 72023
2. Name of Facility Cabot Sanitary Landfill #2
3. Engineer/Firm Bill Staggs/Krist Engineers Address P.O. Drawer AD Cabot, Arkansas 72023
4. Application Date pre-application 9/19/80. Application 12/5/80
5. Site Location 1½ miles north of Cabot's Community Building. Part of the SW¼ of Section 6, T3N, R9W, Lonoke County.
6. Operation Trench type for municipal waste. This site is an extension of the present operation.
7. Residences Within ½ Mile 6 residences within ½ mile. All on city water.
8. Water Supplies Within Vicinity Water wells present at above houses.
9. Soils/Groundwater Soils are generally clay and weathered shale with some sandstone fragments. Trench liners will be required due to the added permeability associated with the shales and boulders. Groundwater at about 9'.
10. Drainage Sequence Into a tributary of Four Mile Creek and eventually (35 miles) into the White River.
11. Hearing Date N/A Dept. Represented ____ Remarks Public hearing not required because same site as permitted before.
12. Recommended Additional Permit Provisions NOTE ADDITIONAL CONDITIONS ON ATTACHED SHEET.
13. Summary Comments This is an extension of the existing permitted facility that has reached its design capacity.

Approval Recommended Yes Engineer Mark Richardson Date 3/16/81

PERMIT APPLICATION SUMMARY

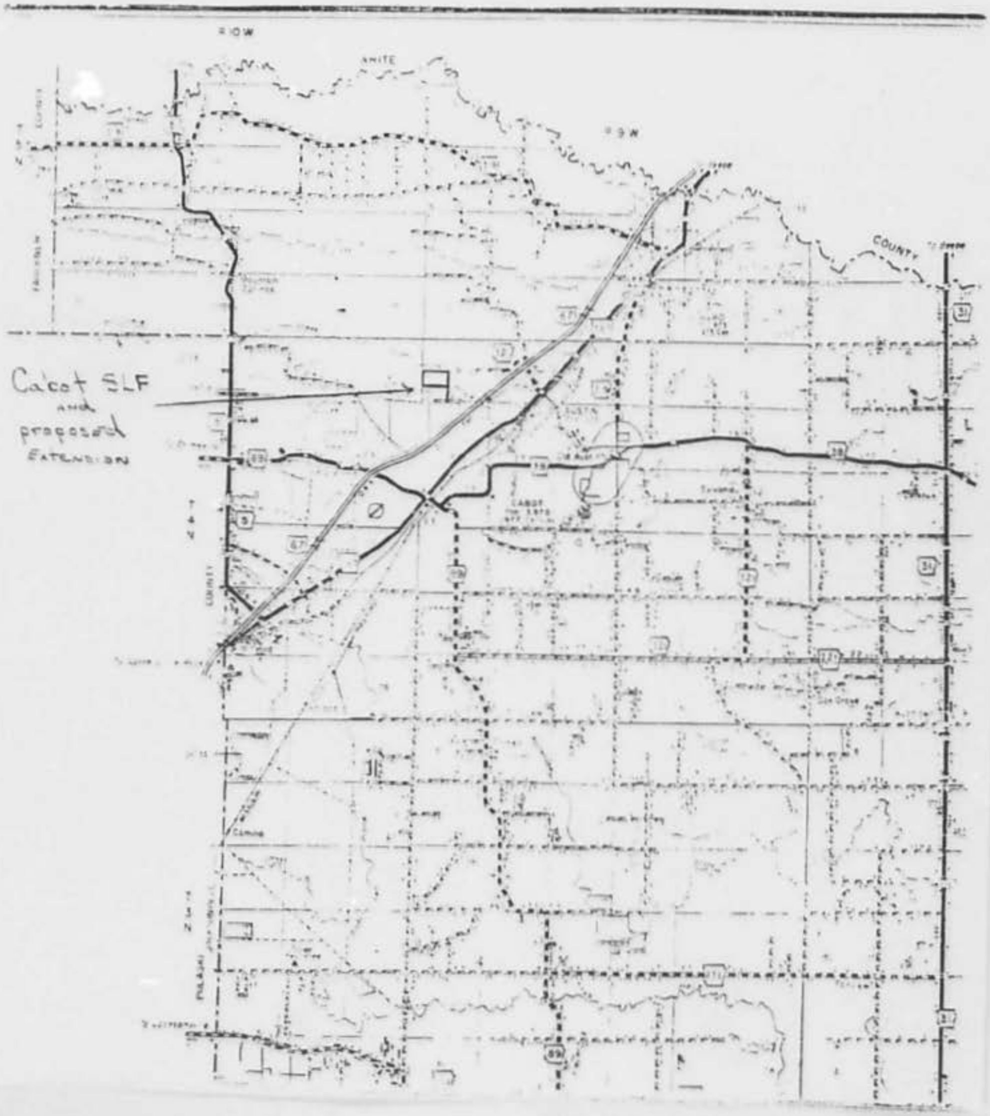
12. ADDITIONAL CONDITIONS

(1) This permit shall expire when the approximate 8½ acre disposal area described in the final engineering plans has been filled to design capacity.

(2) Proper preparation of the site shall be supervised and reported in writing to the Department by a Registered Professional Engineer prior to placement of any waste in the landfill.

(3) A one foot liner constructed of recompacted existing materials will be established in every trench.

(4) As an adjunct to the additional conditions listed above, the permittee is reminded that the provisions of Condition #1 of this permit shall also be satisfied in the construction, operation, and maintenance of the landfill.


Cabot SLF
and
proposed
Extension
WHITE
COUNTY
CABOT

REFERENCE 7

7517

DRAFT

RECORD OF COMMUNICATION	(Record of Item Checked Below) __Phone Call __Discussion _√_Field Trip __Conference __Other(Specify)	
To: Andy Deadmon Public Works Supervisor City of Cabot, AR	From: Michael Watson and Julie J. Koke, FIT Ecology and Environment, Inc. Michael Watson	Date: 1-25-91 Time: 12:00 noon

SUBJECT: Cabot Landfill

SUMMARY OF COMMUNICATION

What was the fate of the drums listed in the PA?

They were relocated to a licensed landfill by the corporation that deposited them.

Was it noted that there was an abandoned well?

Andy pointed to the location of the old well and said that it was part of an old farmhouse. The farmhouse had been demolished and placed in the landfill. The well had been plugged.

Are there any homes in the area which use their own wells?

There is only one home that has a well [redacted] 72023). All others are connected to the city water supply. Wells in the area are low yielding and of poor quality.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

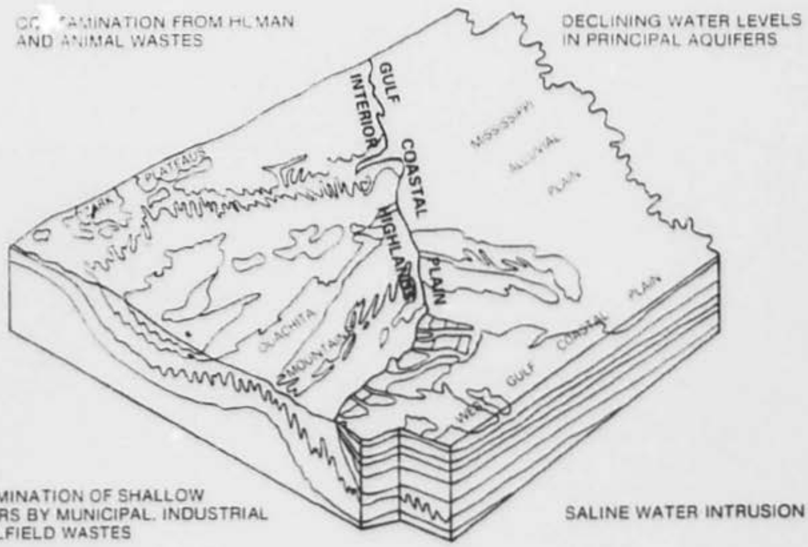
INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REFERENCE 8

Water Resources Investigation Report 85-4010

GROUND WATER PROBLEMS IN ARKANSAS



PREPARED BY

UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY

IN COOPERATION WITH

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
AND
ARKANSAS SOIL AND WATER CONSERVATION COMMISSION

AR

GROUND-WATER PROBLEMS IN ARKANSAS

By C. T. Bryant, A. H. Ludwig, and E. E. Morris

U.S. GEOLOGICAL SURVEY

Water Resources Investigations Report 85-4010

Prepared in cooperation with the

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

and the

ARKANSAS SOIL AND WATER CONSERVATION COMMISSION

Little Rock, Arkansas
1985

GROUND WATER OCCURS IN TWO GEOLOGIC SETTINGS

Ground water is abundant in the Gulf Coastal Plain but is relatively scarce in the Interior Highlands.

Arkansas is divided physiographically into two parts - the Gulf Coastal Plain and the Interior Highlands (front cover) (Fenneman, 1938). The occurrence of ground water is closely associated with the types of rocks which occur in each physiographic area.

The Gulf Coastal Plain encompasses approximately 27,000 square miles in the southeastern half of Arkansas and is underlain in part by thick alluvial deposits and by gently dipping unconsolidated and semiconsolidated sediments (fig. 3.0-1). The sediments that make up the Coastal Plain are of marine and continental origin and consist of alternating sequences of gravel, sand, silt and clay, with local occurrences of limestones and lignite. These sediments form both confining layers and aquifers. In general, the marine deposits consisting of the Jackson Group, Cook Mountain Formation, and Midway Group are composed of clay and form confining layers.

Most of the ground-water supplies in the Coastal Plain are obtained from six aquifers or aquifer systems. These are in the Quaternary deposits, Cockfield Formation, Sparta Sand, Wilcox Group, Nacatoch Sand, and the Tokio Formation. Although other ground-water sources may be important locally for rural domestic supplies, these aquifers constitute the source of nearly all ground-water withdrawals in the southeastern half of the State.

The Quaternary alluvium is the principal source of water for irrigation. Alluvial deposits blanket much of eastern Arkansas, the Ouachita and Red River Valleys in southwestern Arkansas, and isolated areas along the Arkansas River in the Interior Highlands. The alluvium is as much as 250 feet thick in parts of eastern Arkansas and is composed of a coarse sand and gravel aquifer at the base, grading upward to silt and clay at the surface. Wells in the alluvial aquifer generally yield from 1,000 to 2,000 gallons per minute.

The Cockfield formation, Sparta Sand, Wilcox Group, Nacatoch Sand, and Tokio Formation are part of a thick sequence of semiconsolidated Coastal Plain sediments containing water-bearing units that crop out in bands of varying widths roughly parallel to the Fall Line (the dividing line separating the Gulf Coastal Plain and the Interior Highlands) and dip gently to the south and southeast. All or part of each of these formations are composed of thick sequences of sand which are important freshwater aquifers. These formations range in thickness from 200 to 900 feet. Well yields range from 300 to 2000 gallons per minute. Figure 3.0-1 shows the outcrop areas for these formations.

The Interior Highlands encompass about 31,000 square miles in the northwest half of the State and are underlain by thick sequences of consolidated rocks of Paleozoic age consisting mostly of limestones, dolomites, sandstones and shale. The rocks are extensively folded and faulted, and the primary porosity of the rocks has been greatly reduced by compaction and cementation (Cordova, 1963). Ground water occurs primarily in fractures and joints in the sandstones and shales and solution openings in the limestones and dolomites. These rocks are locally important as the source of water for thousands of rural homes in the region. Wells average about 150 feet in depth and generally yield less than 10 gallons per minute. Yields greater than 25 gallons per minute are rare.

The Roubidoux Formation and the Gunter Sandstone member of the Van Buren Formation constitute the only significant aquifer system, except for the Arkansas River alluvium, in the Interior Highlands. They occur only in the subsurface in Arkansas. The Roubidoux is 100 to 250 feet thick and occurs at depths ranging from 600 feet at the Arkansas-Missouri State line to about 2,300 feet below land surface at the southern limits of the area of use. The Gunter Sandstone member is about 50 feet thick and lies 300 to 600 feet below the Roubidoux Formation. Together, these units may yield up to 500 gallons per minute to wells. The Roubidoux Formation and Gunter Sandstone member are recharged in their outcrop areas in southern Missouri.

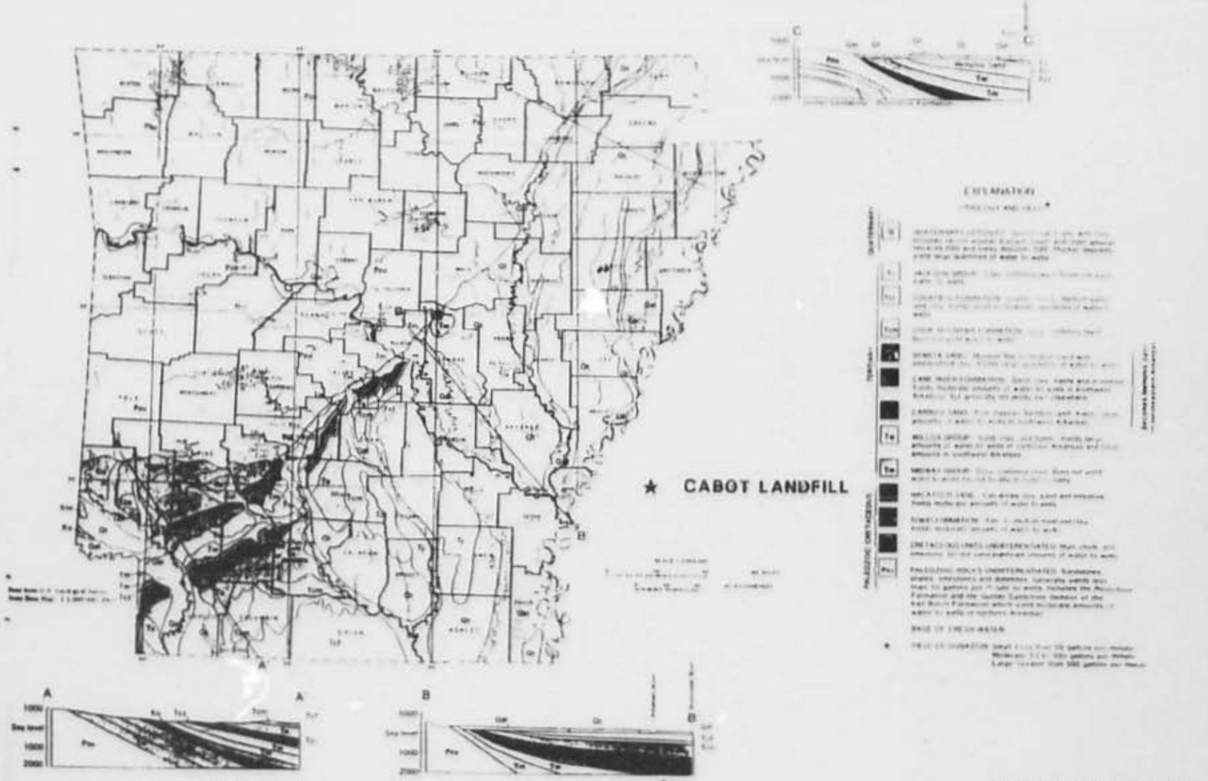


Figure 18-1 Generalized geology and general characteristics of formations

GROUND-WATER AVAILABILITY GOVERNED BY NATURAL CONSTRAINTS

Consolidated rocks in west-central Arkansas yield only small amounts of water to wells. Most units contain saline water at depth.

Ground water is available practically everywhere in the State. At some locations, large quantities of freshwater can be obtained from several aquifers at different depths while at other places, potential ground-water sources are limited or even nonexistent. Thus, the occurrence of ground water in the State is highly variable and is governed by the hydrologic conditions that exist at any given location. The quantity and quality limitations discussed herein represent natural constraints which are determined by the character of the geologic framework which contains the water. Conditions limiting the availability of fresh ground water include: (1) low permeability of sediments or consolidated rocks in a given area, and (2) depth to the base of freshwater. A delineation of areas depicting these two conditions is shown in figure 4.0-1.

Yields to wells of less than 10 gallons per minute occur in a large part of the Interior Highlands in west-central Arkansas and in isolated areas in the Coastal Plain. In the Highlands the surficial rocks yield only limited amounts of water. No freshwater-bearing aquifers exist at depth in the Highlands south of latitude 35°.

Ground-water supplies are also limited in small areas of the Coastal Plain. These consist of areas where the surficial units are comprised of fine-grained sediments that do not readily yield water and, where only saline water is available at depth. Low-yielding areas in the Coastal Plain include the outcrop and subcrop areas of the Carrizo Sand, Wilcox Group, and Midway Group in central and southwestern Arkansas where no freshwater-bearing aquifers exist either beneath or above these units.

In addition to constraints related to low yield, poor water quality may also restrict the use of water. Freshwater occurs in the outcrop areas and for a distance downdip in most of the principal water-bearing units in the State. Freshwater occurs at depths ranging from less than 100 to more than 3,500 feet below land surface. The greatest depth to the base of freshwater occurs in the Gunter Sandstone member of the Van Buren Formation in northern Arkansas. Freshwater is defined herein as water containing less than 1,000 milligrams per liter of total dissolved solid. Concentrations greater than 1,000 milligrams per liter are indicative of high salinity. The salinity is a natural phenomenon resulting from the invasion of formations by brine during or following deposition or by minerals dissolved by reaction as the water percolates through the rocks. The extent to which a given unit contains freshwater represents the limit of flushing of natural brines.

Figure 4.0-1 shows the deepest geologic units which contain freshwater and the elevation of the base of freshwater within each unit. The heavy dashed lines on the map are boundaries indicating the areal extent that a given unit constitutes the lowermost freshwater-bearing source. Beyond the boundary for a given unit the unit either does not contain freshwater or the base of freshwater is in an older (lower) geologic unit. In some areas, as shown on figure 4.0-1, all units contain only saline water. To determine the depth to which freshwater may be found at any given location, subtract, algebraically, the elevation of the base of freshwater at the desired location from the land surface elevation at the site.

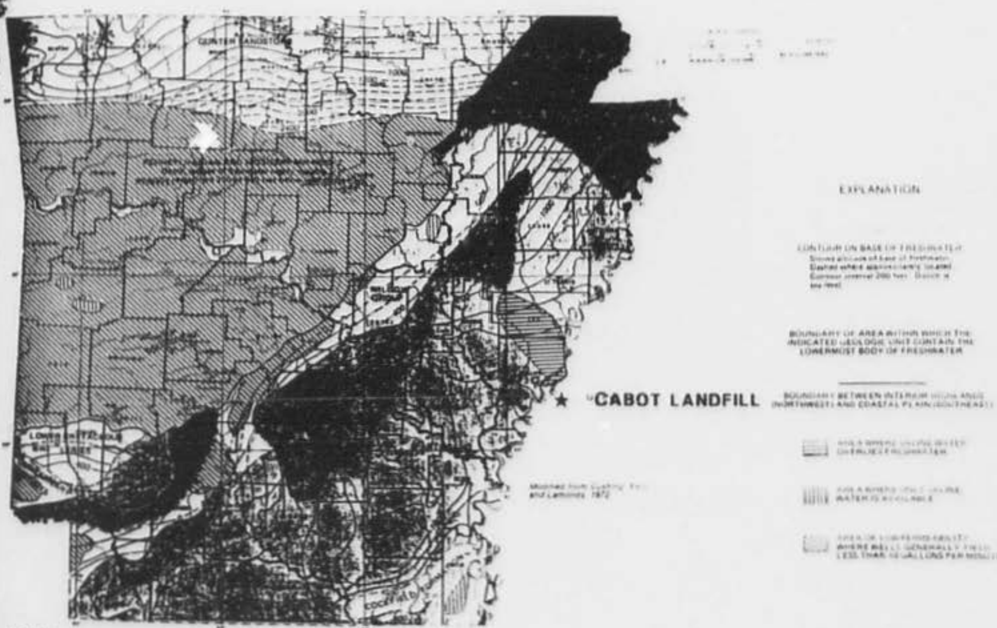


Figure 4.0.1 Depths to the base of fresh ground water and areas of low ground-water yields.

GROUND-WATER PROBLEMS WIDESPREAD

Principal grou[illegible]-water problems include poor natural quality, contamination, and declining water levels.

Ground-water problems in Arkansas are receiving increased attention from both Federal and State regulatory agencies and from water users. Although Arkansas is blessed with an abundance of good quality ground water, problems are fairly widespread in the State (fig. 5.0-1). Principal problems are poor natural quality, contamination, and declining water levels.

Saline water occurs in several places in the alluvial aquifer (fig. 5.0-1). Most of these occurrences involve the migration of saline water from a source or sources at depth. Saline water occurrences at shallow depth in Miller and Lafayette Counties are the result of brines from deep beneath the surface invading the alluvial aquifer through unplugged wells. In some cases, particularly those in Chicot and Monroe Counties, the avenue by which the saline water migrates to the surface is not fully understood. The water may have moved upward through confining beds that are thinned or absent, through naturally occurring faults, or by artificial means through unplugged casings of abandoned oil test wells. Saline water in the alluvial aquifer in Independence and White Counties are natural occurrences resulting from the upwelling of water from brine-containing rocks beneath the alluvium. The saline water in the Arkansas River alluvium may have resulted as recharge from the Arkansas River, which at times contains saltwater derived from saltbeds in Kansas and Oklahoma. Thus the method by which saline water enters the alluvial aquifer differs in various places. More importantly, the number and areal extent of saline water occurrences has increased in recent years primarily as the result of the decline in water levels caused by large withdrawals for irrigation.

In Union County, large-scale ground-water withdrawals from the Sparta aquifer have changed the natural flow direction and are allowing saline water to migrate toward the center of pumping in the vicinity of El Dorado (Broom and others, 1984).

Some contaminants from industrial wastes appear to have entered shallow aquifers. Ground-water quality monitoring data furnished by industries to the Arkansas Department of Pollution Control and Ecology have shown concentrations of arsenic, barium, cadmium, chromium, lead, mercury, nitrate, selenium and silver exceeding safe drinking water limits (table 7.0-3). In addition, the organic chemicals, ethylenedibromide and phenols, for which no limits have been established, have been reported from a few industrial monitoring wells.

As a result of large-scale withdrawals, ground-water levels are declining in some areas of the Gulf Coastal Plain. Water levels in the Quaternary aquifer have declined as much as 60 feet in Poinsett, Cross, Craighead, Prairie, Lonoke, and Arkansas Counties where pumping for irrigation has exceeded recharge (fig. 5.0-1). Water levels in these areas have declined as much as 8 feet in a dry year. For most of the area affected, declines are about 0.75 foot per year.

Water levels are declining in the Sparta aquifer in southeastern and south-central Arkansas where pumping for irrigation, municipal and industrial uses has exceeded the recharge capacity for the aquifer. Water levels in the Sparta aquifer in Arkansas County have declined about 100 feet since pumping for irrigation began in 1905. Large scale industrial and municipal pumping from the Sparta Sand in Union County since the 1920's has lowered the water level in the aquifer about 320 feet (fig. 5.0-1). Other counties affected include Columbia with declines approaching 260 feet and Jefferson County with declines of almost 240 feet. Water levels have declined as much as 12 feet during a dry year and are declining about 1 to 3 feet per year in the areas of decline.

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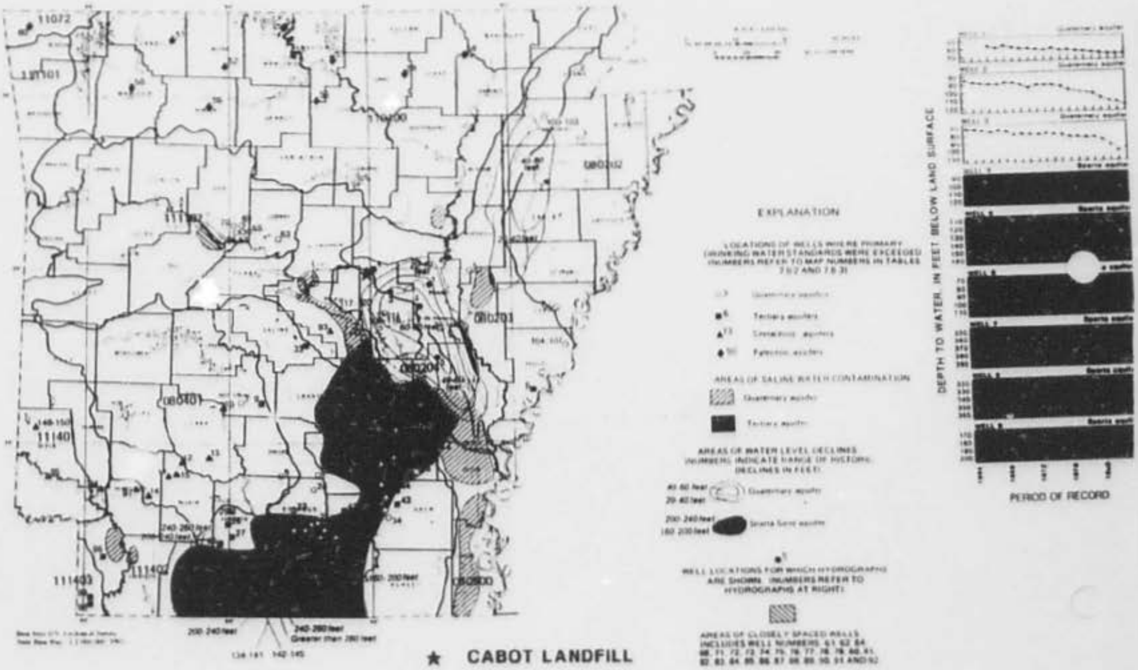

Figure 7.0-1. Principal ground-water problems.

GROUND-WATER PROBLEMS MAY OCCUR ANYWHERE ANYTIME

Potential exists almost everywhere in Arkansas for contamination of ground water from several sources. Greatest potential is in areas of highest recharge.

The potential exists for ground-water problems to occur almost anywhere in the State. Permeable materials that allow water to recharge aquifers will also allow contaminants to enter the ground-water system. Therefore, the potential for contamination is closely related to the recharge rate.

Recharge occurs in varying degrees over the entire State depending on the availability of precipitation, the position of the water table with respect to land surface, and the permeability of the surficial soil or rock material. Previous studies (Sniegocki and Bedinger, 1964) indicate that, on the average, about 2 inches of water enters the ground-water system in the State annually. Model studies of the Quaternary aquifer (Broom and Lyford, 1981) indicate recharge rates of less than 0.4 inch per year, whereas, in a study by Bedinger and others, (1963) a rate of 10 inches per year was determined. Insufficient data preclude a quantitative statewide evaluation of recharge rates. However, in this report, a generalized evaluation is presented, based on precipitation, position of the water table, and permeability of surficial materials.

Zones for various estimated rates of recharge are delineated on figure 6.0-1, and explained in table 6.0-4. Zones delineated on the map are designated as having either high, moderate, or low recharge potential depending on the general nature of the surficial materials within a given area. Areas of high potential include those in which the surficial materials readily allow percolation of water. These include the outcrop areas of confined aquifers, and upland terrace deposits lacking a clay cap, and areas in the Interior Highlands where extensive fracture systems or solution channels have developed. Areas designated as having moderate recharge potential include those in which the surficial materials retard the percolation of water or the ground-water system is capable of storing only limited amounts of water. Areas of low recharge potential include those in which thick, relatively impermeable clays lie directly beneath the land surface. The potential for ground-water contamination by hazardous materials disposed of on the land surface coincide generally with the rates of recharge to aquifers.

Sources of high-potential ground water contamination in Arkansas are waste impoundments, landfills (including open dumps) and hazardous waste operations (fig. 6.0-1). Additional sources of potential ground-water contamination include storage tanks, septic tanks, waste-injection wells, mining activities, pipelines, and wastes spilled during transport.

The State of Arkansas conducted a Surface Impoundment Assessment in 1978-79 to locate all liquid waste holding surface impoundments in the State and, as far as possible, to assess the potential hazards to ground water from these impoundments. In the initial phase 7,640 impoundments were located at 672 sites (Chesney, 1979). The type of impoundments were related to agricultural, oil and gas, industrial, municipal and mining activities. Over 6,000 impoundments were associated with oil and gas operations in west-central and southern Arkansas The oil and gas impoundments were too numerous to show individually and are shown on figure 6.0-1 as generalized areas only.

Of the 7,640 impoundments in the State, 518 were selected for assessment of contamination potential. The assessment conducted by Chesney included descriptions of the characteristics of the impoundments such as size in acres, age, amount and type of wastes present and type of liner, and the presence of monitoring wells. In addition the geologic formations underlying the impoundments were rated according to the ease with which contaminants could penetrate surface layers. With this information numeric ratings were given to the impoundments based on the toxicity and mobility of the waste product and on the local environment. For this report only surface impoundments having a hazard rating of 16 (on a scale of 1 to 29) or above are shown in figure 6.0-1.

There are more than 340 landfills, including sanitary landfills, open dumps, legally closed dumps, and abandoned dumps in Arkansas (fig. 6.0-1). Complete information as to the amount or kinds of wastes that have been disposed of in landfills is not available. Further, little documentation is available to determine if contamination of underlying aquifers has occurred. Included among the impoundments and landfills are several sites known to contain hazardous wastes. Among these sites are several which are covered by Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). RCRA sites are those where hazardous wastes are treated under authorization of regulatory agencies. These sites require permits to operate and in some cases, ground-water monitoring is required. There are 16 of these sites in Arkansas (fig. 6.0-1). CERCLA (Superfund) sites are hazardous waste sites considered to be potential sources of significant harm to human health or the environment. Seven such sites exist in Arkansas.

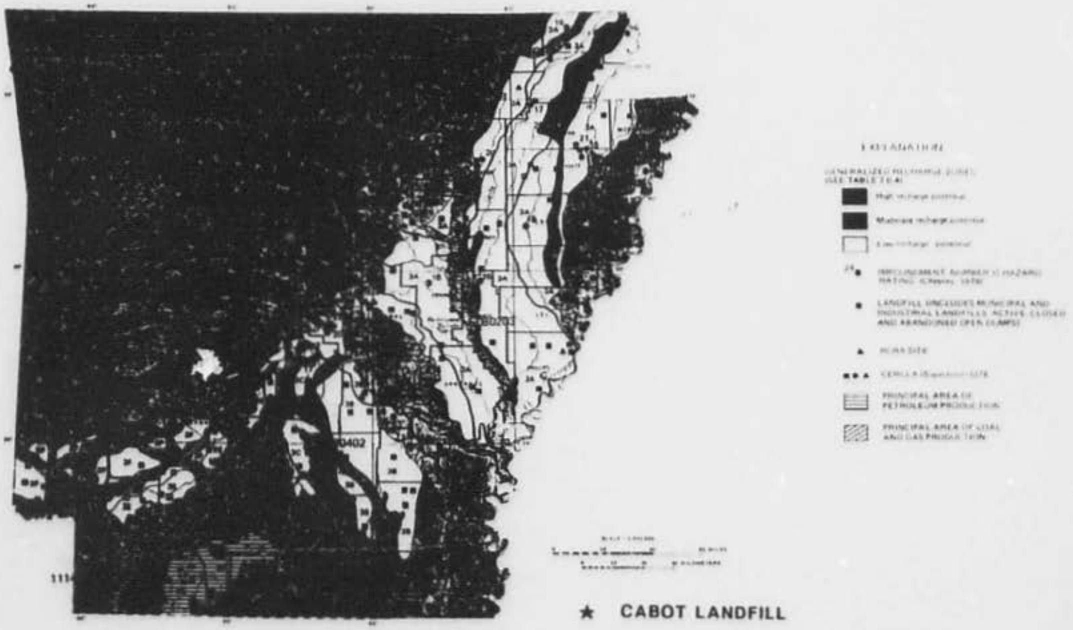

Figure 6.0-1 Generalized recharge zones and potential ground-water contamination sources

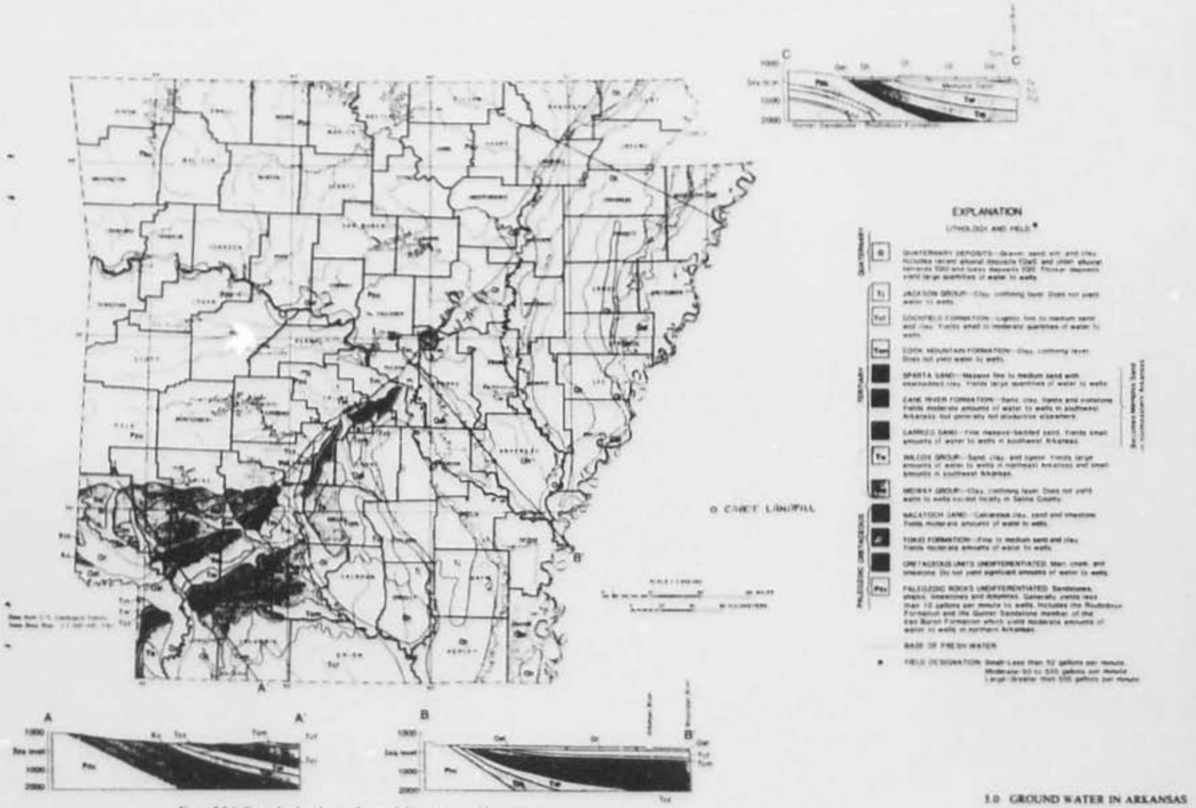

Figure 3.0-1 Generalized geology and general characteristics of formations

Figure 4.0-1 Depths to the base of fresh ground water and areas of low ground water yields.

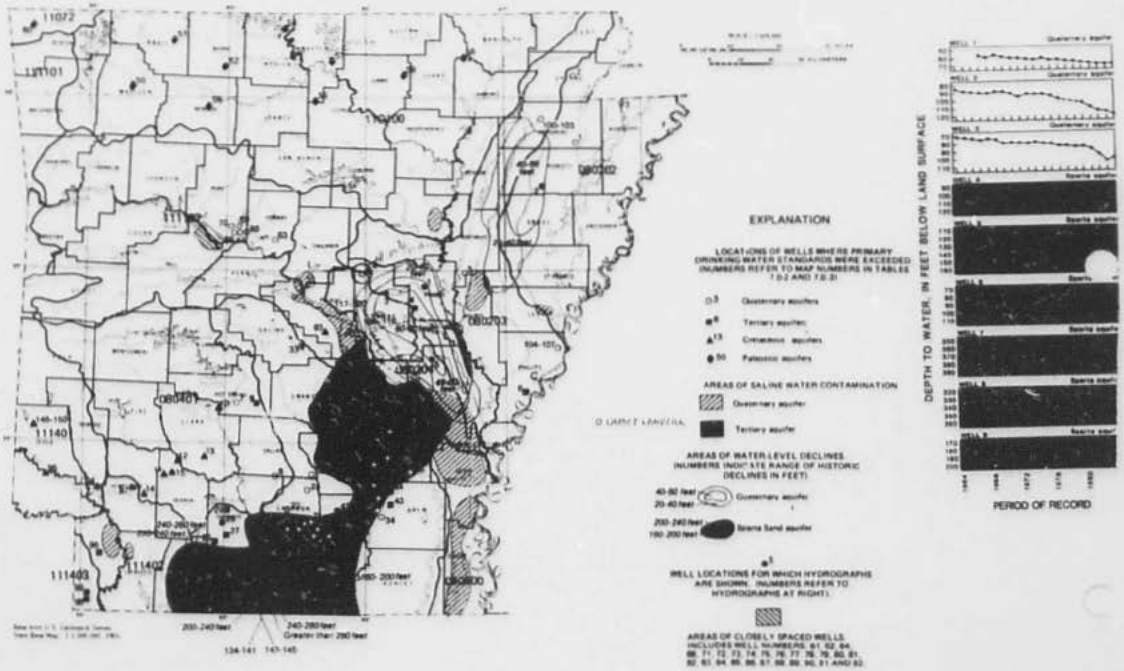

Figure 5.0-1 Principal ground-water problems.

Figure 6.0-1. [illegible] recharge zones and potential ground-water contamination sources.

REFERENCE 9

STATE OF ARKANSAS

Arkansas Geological and Conservation Commission

Norman F. Williams, Geologist-Director

WATER RESOURCES CIRCULAR NO. 5

GROUND-WATER RESOURCES OF PARTS OF LONOKE, PRAIRIE, AND WHITE COUNTIES, ARKANSAS

by

Harlan B. Counts

U. S. GEOLOGICAL SURVEY

Prepared in cooperation with the United States Geological Survey

Little Rock, Ark.

1957

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GROUND-WATER RESOURCES OF PARTS OF LONOKE, PRAIRIE, AND WHITE COUNTIES, ARKANSAS

By Harlan B. Counts

SUMMARY

Ground water is by far the most important mineral resource in northern Lonoke, northern Prairie, and southeastern White Counties, Ark. More than 95 percent of the water used for all purposes comes from wells, and the total pumpage amounts to nearly 11 billion gallons a year. Most of this is used during the summer irrigation season, but averaged over the year it amounts to about 30 mgd (million gallons per day). Irrigation takes about 28.5 mgd, of which 24 mgd is used in the cultivation of rice and 4.5 mgd is for supplemental irrigation of row crops. Municipalities use about 0.5 mgd and other domestic uses, chiefly on farms, require about 1 mgd. Although ground water now plays a large role in the economy of the area, considerable additional development of this important resource is possible.

A study of the ground-water resources of the area was made to determine the occurrence, availability, movement, recharge, discharge, and mineral content of the ground water in an area in which the development of irrigation wells has been stimulated by 3 years of drought (1952-54). The present report should be useful to cities and towns, farmers, well drillers, and others who now operate or wish to drill wells, by helping them to determine, for any given location, the depth to water, the character of the materials that will be penetrated by the drill, the chemical quality of the water, and the quantity of water available. In short, it should aid the citizens in making the most economical development of their ground-water resources and in preventing overdevelopment.

The geologic formations serve as both the storage reservoirs and the conduits through which the ground water is slowly moving (in this area at an average velocity of about 0.3 foot per day) from places of natural recharge to places of natural discharge or to wells. For this reason the geologic map (pl. 1, p. 59) is an important key to the availability and character of the ground water.

Wells yielding about 400 to 1,700 gpm (gallons per minute) can be developed at depths of about 60 to 156 feet in the Quaternary deposits that contain basal sand and gravel (pl. 1). Test drilling disclosed the presence of this favorable condition in the eastern part of the Sand Hills area, where supplemental irrigation could benefit cotton, pastures, hay, and strawberries presently grown there and might make possible the growing of many other crops. In two areas of concentrated pumping for rice irrigation, west of Des Arc and in the south-central part of the area at the boundary, water levels have been lowered to such an extent that it is thought that any considerable increase over the present development would result in significant depletion of local ground-water resources. Elsewhere in the area of its occurrence, the principal aquifer, here defined as that part of the area of Quaternary deposits in which the basal gravel zone is present, will perennially supply many additional irrigation wells.

Test drilling also disclosed the absence of the sand and gravel deposits that compose the principal aquifer in those Quaternary deposits which lie near the Fall Line and those which occupy embayments along the larger streams that issue from the Interior Highlands. Definition of the approximate boundary between those Quaternary deposits that contain the principal aquifer and those that do not should aid in locating irrigation wells where the aquifer is present and save much fruitless drilling in areas where it is not present.

In one area of unknown but probably small extent southeast of Bald Knob, water in the principal aquifer is too salty for most uses. (See Fig. 8.)

There is some possibility that wells 100 to 600 feet deep may obtain soft water from deposits of the Wilcox formation and the Claiborne group in the areas shown on plate 1 and described on page 9. No water wells have yet penetrated those units in this area, but they offer promise of possible development for municipal and domestic supplies.

The Tertiary(?) undifferentiated deposits generally contain meager amounts of water, sufficient only for individual farm wells, but test drilling disclosed one aquifer southeast of Cabot that will supply wells having a capacity of several hundred gallons a minute each. Cross sections through this aquifer are shown on plate 6 (p. 63) and the aquifer is described on pages 10 and 11.

The cross sections shown in plates 2-4 illustrate the positions of the several aquifers and the relationships of the different formations to one another in vertical planes as the geologic map illustrates the relationships in a horizontal plane. By use of the sections and the map in connection with the table of well records, one may determine the probable ground-water conditions at the site of his well.

The characteristics of all the larger irrigation, municipal, and industrial wells in the area, as well as of many of the smaller domestic and stock wells, are recorded in table 9. Chemical analyses of water from representative wells in the different formations throughout the area are given in table 8. By the use of these tables and the index map showing locations of wells (pl. 6), one may determine the probable chemical quality of the water to be derived from the several water-bearing formations at any location in the mapped area.

INTRODUCTION

This is one of a series of reports on the ground-water resources of Arkansas made under a program of investigations by the United States Geological Survey in cooperation with the Arkansas Geological and Conservation Commission. The program has been in progress since 1946 in cooperation with several State agencies, and the areas covered by reports resulting therefrom are shown in figure 1. These reports and other pertinent literature are listed in the bibliography, page 46. Annual water-level measurements in the rice-growing area are made cooperatively by the U. S. Geological Survey and the Arkansas University Agricultural Experiment Station.

The purpose of the present report is to describe the occurrence, availability, movement, recharge, discharge, and chemical quality of the ground water in northern Lonoke, northern Prairie, and southeastern White Counties, where interest in the development of irrigation wells has been stimulated by 3 years drought (1952-54). The report should be useful to cities and towns, farmers, well drillers, and others who now operate or wish to drill wells, by helping them to predict at any given location the depth to water, the character of the materials that will be penetrated by the drill, the chemical quality of the water, and the quantity of water available. In short, it should aid the citizens of this area to make the most economical use of their ground-water resources and to prevent overdevelopment.

Reports on the ground water of this area were made by Purdue in 1905 and Stephenson and Crider in 1916. Where possible, information from these earlier studies has been used in the preparation of the present report.

The field work in the area was started in March 1954 and continued intermittently until April 1956. The work was done under the direct supervision of P. E. Dennis, District Geologist, and under the general direction of A. N. Sayre, Chief of the Ground Water Branch, U. S. Geological Survey. The chemical analyses were made by the Quality of Water Branch of the U. S. Geological Survey, at Fayetteville, under the direct supervision of J. W. Geurin, District Chemist.

ACKNOWLEDGMENTS

The writer is grateful for the cooperation and help received from many people during the investigation and in the preparation of this report, including well owners, water-well drillers, and representatives of various Government agencies. Many logs and other data were furnished by Messrs. Fred Lilly and Bob Lilly of Lilly Bros. Well Co., and by the Layne-Arkansas Co.

REGIONAL SETTING AND PHYSIOGRAPHY

The area described in this report (fig. 1) is roughly triangular and comprises about 1,200 square miles in central Arkansas. The White River on the east and the Fall Line escarpment on the northwest form natural boundaries. The southern boundary is the southern edge of T. 3 N. and was chosen because it represents the northern limit of a previous study (Engler, Thompson, and Kazmann, 1945) of the Grand Prairie region.

Physiographically the area includes a part of each of the two major provinces of Arkansas—the Interior Highland province and the Coastal Plain province (Croneis, 1930, p. 7). For convenience of description, the transition zone between the highlands and the plains is here called the Fall Line and a part of the plains that is considerably more hilly than the rest is called the Sand Hills. (See pl. 1). Only a marginal area of the Highlands province is included in this study.

Rocks of Paleozoic age, exposed in the Interior Highlands, disappear abruptly beneath rocks of Tertiary and Quaternary age at the Fall Line. The straightness of that line and its offset where it is crossed by the White River strongly suggest a fault-line scarp. However, available subsurface data on the Paleozoic rocks show no offsetting of beds, and thus no evidence of faulting or of sharp monoclinal folding. On the contrary, at least locally, the Fall Line is near the axis of a broad anticline (Caplan, 1954, pl. 9, sec. E-E').

The term "Sandhill area" was adopted, from local usage, by Purdue (1905, p. 93) for the hilly area south of Austin. The Sand Hills as used in the present report (pl. 1) include all of the hilly area and extend from Cabot to about a mile east of Hickory Plains and from Cypress Creek to Wattensaw Bayou. The core of the Sand Hills is south of Cabot and Austin in the dissected ridges that rise to altitudes generally 300 to 400 feet above sea level. Dissected in terracelike steps, the highest prominent bench is about 340 to 345 feet above sea level, the next lower is about 325 to 330 feet above sea level, and the third is

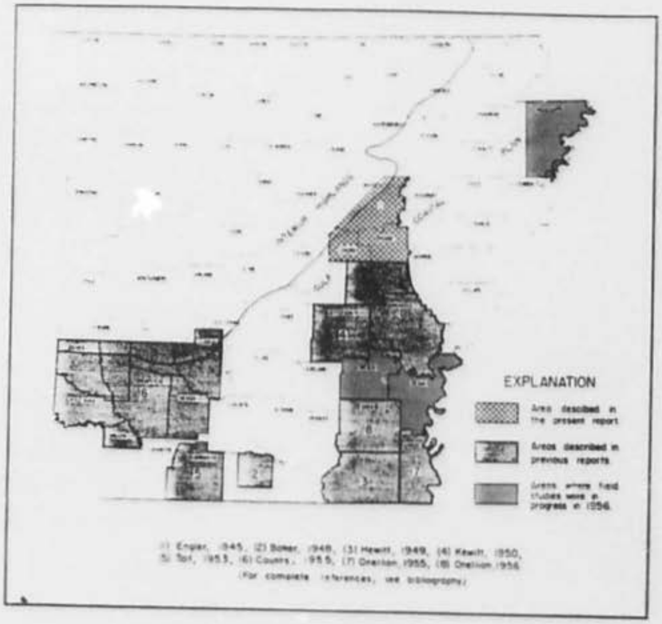

Fig. 1 Map of Arkansas showing areas in which recent ground-water studies have been made

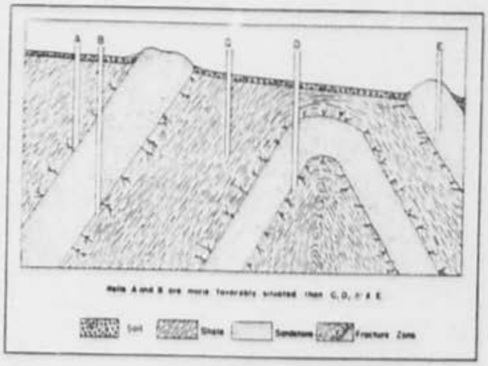

Fig. 2 Sketch showing favorableness of well locations in the Atoka formation with respect to structure

about 260 to 265 feet above sea level. East of Pigeon Roost Creek the entire area has been terraced and has a maximum altitude of about 260 to 265 feet. The Sand Hills thus are composed of two parts separated for a part of its course by Pigeon Roost Creek. The physiographic difference between them is the expression of a difference in the underlying rock materials. In the western (dissected ridge) area the Tertiary(?) undifferentiated deposits have not been removed but only dissected and terraced. In the eastern (terrace) area the Tertiary(?) undifferentiated deposits were removed to a depth of about 150 feet below the present surface and 150 feet or more of Quaternary materials were deposited. The Quaternary deposits were subsequently eroded and terraced. Both areas have been subjected to the erosion that produced the terraces at and below 265 feet above sea level.

The Coastal Plain area (pl. 1) is part of the "Advance Lowland" described by Stephenson and Crider (1916, p. 25) as a subdivision of the Gulf Coastal Plain. It consists of broad and nearly level interstream divide areas and flood plains cut from a few feet to about 25 feet below them. The bottom lands of the flood plains are characterized by numerous swamps, bayous, lakes, and abandoned stream channels.

The area is drained chiefly by the White River and its tributaries — Little Red River, Bayou des Arc, Cypress Creek, and Wattensaw Bayou.

CLIMATE

The climate in northern Lonoke, northern Prairie, and southwestern White Counties is characterized by relatively mild temperatures and by usually abundant rainfall. Winters usually are short and mild, but have occasional cold periods of a few days' duration. Summers commonly are long and hot, maximum temperatures reaching 100° F during July and August. Rainfall usually is abundant and on the average is well distributed over the year. However, in any given year a varying number of months may receive more or less than the average amount of precipitation for those months. Large deficiencies or excesses are especially common during the growing season.

According to the U. S. Weather Bureau, the normal annual precipitation recorded at Searcy, White County, is 47.79 inches, and the average annual temperature is 61.6 F. The distribution of the normal precipitation at Searcy, by months, and the average temperature are given in table 1.

TABLE 1

Normal Monthly Precipitation and Average Monthly Temperature at Searcy, White County, Ark.

Month	Precipitation (inches)	Temperature (°F)
January	4.77	40.6
February	3.50	44.9
March	4.66	52.2
April	4.84	61.2
May	4.52	69.0
June	3.98	77.6
July	2.95	81.4
August	3.60	80.7
September	2.93	74.5
October	3.13	63.0
November	4.30	50.9
December	4.61	42.8

The average frost-free growing season is 217 days. Killing frosts have occurred as late as April 20 and as early as October 9.

CULTURAL DEVELOPMENT

The population of the area decreased between 1930 and 1950, as indicated in table 2. The population density for Lonoke, Prairie, and White Counties is about 30 persons per square mile.

TABLE 2

Population of Lonoke, Prairie, and White Counties, 1930 to 1950

County	Population		
	1930	1940	1950
Lonoke	33,759	29,802	27,278
Prairie	15,187	15,304	13,768
White	38,269	37,176	38,040

Most of the people live on farms and are employed in agriculture. Cotton and rice are the principal crops in Lonoke and Prairie Counties, and cotton and strawberries are the principal crops in White County. Other crops are soybeans, oats, corn, and hay. Fish and minnow culture also is important.

The principal industries in the area are the processing of agricultural products and lumbering.

GEOLOGY AND WATER-BEARING PROPERTIES OF THE ROCKS

Ground water occurs in and moves through the generally small openings in rocks which serve both as storage reservoirs and as conduits through which the ground water moves from places of natural recharge to places of natural or artificial discharge. An understanding of the lithology and the distribution of rock formations is therefore necessary to an understanding of the occurrence and movement of the ground water.

The following generalized section (table 3) gives the names, ages, ranges in thickness, characteristics, and water-bearing properties of the rock units in the area of study, arranged in order from youngest at the top to oldest at the bottom. The cross sections (pls. 2-4) show the position of the water-bearing beds relative to one another and to the confining beds. The geologic map (pl. 1) shows the distribution of those units which are exposed at the surface.

Quaternary alluvial deposits cover a large part of the area to a maximum depth of about 156 feet. In most of the area they contain basal sand and gravel beds which make up by far the most important aquifer in the area. However, the coarse basal beds are absent in a part of the Quaternary deposits, as shown on plate 1. Beneath the Quaternary deposits in part of the southeastern half of the area, soft water may possibly be obtained from sand beds of the Wilcox formation and the Claiborne group. Although these Tertiary units do not crop out at the surface, the general area in which fresh water may be obtained from them is indicated on the geologic map (pl. 1).

The Tertiary(?), undifferentiated, deposits and the hard rocks of the Atoka formation generally are not important as water-bearing beds, although they do furnish water to domestic wells in the areas of outcrop.

The character and water-bearing properties of these rocks, beginning with the oldest, are described in the following pages.

ATOKA FORMATION
(PENNSYLVANIAN)

Rocks belonging to the Atoka formation, of Pennsylvanian age, are exposed along the Fall Line, and crop out, or are covered by a thin veneer of later deposits and soil, northwestward from the Fall Line in White and Lonoke Counties. Southeastward from the Fall Line they underlie the younger deposits at progressively greater depths. The Atoka consists of interbedded shale, siltstone, and sandstone, the shale making up two-thirds to three-fourths of the thickness. The siltstone and sandstone beds generally are very tightly [ce]mented and not uncommonly quartzitic. T[hey] range from thin lenses less than an inch th[ick] to massive beds 4 or 5 feet thick. They g[en]erally are noncalcareous and nonfossilif[er]ous, are tan to gray, and contain black c[ar]bonaceous markings on some bedding plan[es]. The shale commonly is micaceous and v[ery] dense and has a superficial resemblance [to] low-rank slate or phyllite. It is gray to bl[ack] and generally noncalcareous and nonfossilif[er]ous.

The Atoka formation is very thick, perh[aps] 7,000 to 9,000 feet in its area of outcr[op]. However, Caplan (1954, p. 80) reports th[at] the Lion No. 1 Nalley well in sec. 33, T. [?] N., 7 W., in White county encountered o[nly] about 935 feet of Atoka where some 2,500 f[eet] was expected.

A system of generally eastward-trendi[ng] folds is the principal structural feature affe[ct]ing the Atoka formation. The folds are re[la]tively sharp and have steeply dipping lim[bs] near Cabot but become progressively mo[re] open northeastward. In the vicinity of B[ald] Knob and Bradford the beds are essentia[lly] horizontal, having dips of 1° or 2°, except ne[ar] the Fall Line where the southward dips i[n]crease to 5° to 15°. Although the folds ge[n]erally strike east, some divide, change dire[c]tion of strike and become more sharp[ly] arched as they approach the Fall Line.

An anticline near Cabot (pl. 1) produc[es] dips of as much as 70°, the steepest in th[e] area. The anticlinal axis lies about midw[ay] between Cabot and Austin, and the sandsto[ne] beds on both flanks produce eastward-strikin[g] parallel ridges. On the south flank, howeve[r,] the beds are flexed sharply southward at th[e] Fall Line as if by drag along a fault in whic[h] the Highland block had shifted northeas[t]ward. West of Beebe the strike of the fo[ld] axes changes to northeast, there being a shar[p] anticline at and nearly parallel with the Fa[ll] Line. Those folds plunge southwestwar[d]. About 4 or 5 miles northwest of Beebe, Stat[e] Highway 31 crosses a shallow almost circula[r] structural basin. Another basin, more elon[]gate, occurs southwest of Searcy. An ant[i]cline north of Searcy also plunges southwest[]ward. These and other less prominent fold[s] are shown by strike and dip symbols on th[e] geologic map (pl. 1).

Numerous domestic wells obtain water fron[m] the Atoka formation along and near the Fal[l] Line. Most of the wells are shallow, common[ly]

TABLE 3

Generalized Geologic Section for Parts of Lonoke, Prairie, and White Counties, Ark.

Era	System	Series	Subdivision	Thickness (feet)	Character of Materials	Water Supply
Cenozoic	Quaternary	Recent(?)	Alluvium	0-50	Clay, commonly red, in places gray; silt, generally sandy to gravelly.	Generally non-water-bearing. Locally domestic water supplies are obtained from basal part.
		Pleistocene(?)	Alluvium and terrace deposits	0-150	Sand and gravel in basal part, commonly overlain by fine sand, silt, and clay.	Basal part is most important aquifer in this area. Irrigation-well yields are as high as 2,000 gpm.
	Tertiary(?)	(?)	Undifferentiated deposits	0-150	Sand, clayey, and sandy clay, generally yellow to reddish-brown, mottled with gray spots where reducing conditions have existed. Channel fillings of clean sand occur locally.	Clean sand beds are important locally for domestic water supplies.
	Tertiary	Eocene	Claiborne group	0-700	Sand, white to light-gray, fine to medium, and gray to tan clay and sandy clay.	May possibly yield soft water in southeastern part of area. Salty water at base. Not yet developed by wells.
			Wilcox formation	0-800	Clay, chocolate-brown or speckled light-gray and black; lignitic clay and lignitic fine sand.	Probably contains fresh water in narrow belt across area, but wells were not developed in formation at time report was written.
		Paleocene	Midway formation	0-500	Clay, dark-blue-gray to black, noncalcareous to very calcareous. A few very thin beds of white clay and dense fine-grained sandstone.	Generally non-water-bearing in this area.
Mesozoic	Cretaceous	Upper Cretaceous (Gulf)	Undifferentiated deposits	0-150	Sandstone, light-gray to white, fossiliferous, calcareous, glauconitic, overlain and underlain by sandy clay, shale, and marl.	Deeply buried where present and probably contains only salty water.
Paleozoic	Pennsylvanian	Atoka	Atoka formation	500?-1,500?	Shale and sandstone interbedded. Sandstone generally tightly cemented. "Slate-rock" of drillers.	Water bearing only in area of outcrop. Locally contains small quantities of water in joints and other fractures, generally within 150 feet of the surface. Wells commonly yield 1 to 10 gpm.

ly about 50 or 60 feet deep, because the water occurs in fractures in the rock, which become fewer and less open with depth. Water generally is obtained from the hard shale, or "slate rock" as it is called locally.

Generally the sandstone is very tightly cemented, and the most permeable zone is in the shale immediately adjacent to a sandstone bed. Differential movement between the shale and sandstone beds seems to have occurred during their deformation, producing a shattered zone near the contact.

A structure that exposes the fractured contact zone to local recharge is likely to increase the amount of water available for withdrawal from wells. For this reason the flanks are more favorable than the crests of anticlines as sites for wells, as illustrated in figure 2 (p. 4). Wells C and E have not reached a fractured zone and neither of the fractured zones penetrated by well D is exposed to local recharge.

UPPER CRETACEOUS UNDIFFERENTIATED DEPOSITS

Cretaceous formations probably do not crop out in the area studied, although they are present at the surface in southwestern Arkansas and in a narrow band along the Fall Line northeast of the White River. Cretaceous fossils were reported by Stephenson and Crider (1916, p. 40, 49) to have been obtained from wells dug into strata below the Midway formation at Cabot and Beebe. No further evidence of rocks of Cretaceous age was found in these areas during the present investigation. Electric logs of oil-test holes (pl. 4) show the Upper Cretaceous to be present in the southeastern part of the area studied and to be overlapped by the Midway near the Fall Line. The Cretaceous rocks consist chiefly of sand or crumbly sandstone overlain and underlain by sandy clay, shale, and marl. No attempt has been made in this report to differentiate the Cretaceous deposits, but all or part of the sandstone probably is the Nacatoch sand Caplan (1954, p. 90) states that "The absence of the Nacatoch between the Fall Line and the tentative zero contour line on Plate III is attributed here to complete removal of the Upper Cretaceous section by pre-Midway erosion rather than by non-deposition." If he is correct in this view, then the rocks of Cretaceous age found by Stephenson and Crider might be isolated remnants.

Rocks of Cretaceous age are unimportant hydrologically, because any remnants near the Fall Line are likely to be small and isolated and the Nacatoch sand at depth contains only salty water in the southeastern part of the area shown on plate 1.

MIDWAY FORMATION

Rocks of the Midway formation crop out in small patches southwest of Bradford and near Cabot. The actual outcrops are far too small to be shown on a small-scale map and are therefore exaggerated on plate 1. That the rocks of this formation are present at shallow depths throughout all or most of the area near the Fall Line is attested by their indentification in cuttings from many water wells and test holes. Southeastward (basinward) the thick shale section of the Midway formation is easily recognized in electric logs (pl. 4) of oil-test holes. The Midway unconformably overlies Cretaceous beds and is in turn unconformably overlain by the Wilcox formation. Toward the Fall Line, the Midway formation overlaps the rocks of Cretaceous age (pl. 4), and at many well locations in the Cabot area it rests directly upon the Paleozoic bedrock. Near its outcrop area the Midway formation is overlain unconformably by the Tertiary(?) undifferentiated deposits which may possibly be of the Wilcox formation but probably are to be correlated with the Claiborne group or later deposits.

In complete sections of the Midway formation as encountered in oil test holes Caplan (1954 p. 94) describes an upper unit of dark, blue-gray fissile noncalcareous shale containing sideritic concretionary layers, and a lower unit of soft, gray calcareous, fossiliferous shale containing lenses of white limestone near the base. In the Cabot area the Midway formation consists of a dark-gray to black waxy-appearing noncalcareous nonfissile clay, 10 to 50 feet thick, overlying softer blue-gray calcareous clay containing Paleocene Foraminifera. Southwest of Bradford it consists of sandy to conglomeratic fossiliferous limestone interbedded with calcareous friable sandstone.

Foraminifera recovered from a shallow dug well in Old Austin, and from a depth of 120 to 125 feet in a test hole east of Jacksonville were submitted to the Paleontology and Stratigraphy Branch of the Geologic Division, U. S. Geological Survey, for identification. A report by Ruth Todd of that Branch lists a total of 31 species, 27 from the test hole and

23 from the dug well. She states, "The fauna is very similar to a Paleocene one described from Little Rock, Arkansas (Contr. Cushman Lab. Foram. Res., v. 22, pt. 2, 1946, p. 45-65, pls. 7-11). The fauna is marine, deposited at moderate depths (probably 10 to 100 fathoms, more likely toward the deeper end of this range, although possibly shallower than 10 or deeper than 100 fathoms), and under the influence of ocean currents, as globigerinids are present."

In oil test holes (pl. 1) the Midway formation shows a remarkably uniform thickness of about 400 to 500 feet, but near the Fall Line it thins to a featheredge, probably because of removal by erosion rather than because of nondeposition.

The Midway formation is not known to yield water to wells in the area of the present study, although both the basal limestone and the interbedded sandstone are reported to furnish water to domestic wells southwest of Little Rock.

WILCOX FORMATION

The Wilcox formation is not known to crop out in the area covered by this investigation unless the rocks here designated Tertiary(?) undifferentiated deposits (pl. 1) represent that formation. In the southeastern part of the area electric logs of oil-test holes indicate that the Wilcox formation unconformably overlies the Midway formation and is overlain (probably disconformably) by deposits of the Claiborne group (pl. 4). In cuttings from test holes the Wilcox formation is found to consist of chocolate-brown lignitic clay and speckled light-gray and black sandy clay with interbedded very fine sand. Plant fragments and pieces of lignite are locally abundant. It generally is nonfossiliferous except for the plant materials. Interpretation of the electric logs indicates that the Wilcox ranges in thickness from a featheredge to about 800 feet in this area.

In eastern Arkansas and western Tennessee, where it is an important aquifer, the Wilcox contains thick sand beds known locally as the "1,400-foot" sand. According to Stearns and Armstrong (1955, p. 12-13, 17; pls. 5, 7), this sand does not appear to be present along the western edge of the embayment. However, electric logs show sand beds at the base of the Wilcox in the northern Grand Prairie region, and some of these beds probably contain fresh water in the area shown on plate 1. No water wells have yet been drilled to this formation. Test holes or wells to determine the water-yielding characteristics of the Wilcox formation should be drilled in the belt indicated on plate 1. Fresh water might be expected to occur in this formation at a minimum depth of about 100 feet and a maximum depth of about 250 feet near the northwestern boundary of the belt, at a minimum depth of about 400 feet and a maximum depth of about 600 feet near the southeastern boundary of the belt, and at intermediate depths between the boundaries. Down dip, water in the sands of the Wilcox is salty.

CLAIBORNE GROUP

Rocks of the Claiborne group are not known to crop out in the area of the present study unless the rocks here designated as Tertiary (?) undifferentiated deposits belong to that group. Electric logs of oil-test holes indicate that there is considerable sand in the rocks of the Claiborne group where they overlie the Wilcox formation in the southeastern part of the area. However, presently available information does not permit differentiation of the group into the Cane River formation, the Sparta sand, the Cook Mountain formation, and the Cockfield formation, as is possible in southwestern Arkansas. Few samples of the Claiborne are available from this area, but where known they consist generally of white to light-gray fine to medium sand with interbedded gray or tan clay and sandy clay, lignitic clay, and lignite.

Electric logs of oil-test holes indicate that the upper sand beds in the Claiborne group probably contain fresh water in the southwestern part of the area shown on plate 1. Test holes should be drilled southeast of the line shown on this map to determine the water yielding possibilities of the Claiborne in this area. Fresh water might be expected in this formation at a minimum depth of a little more than 100 feet throughout the area shown and at a maximum depth between about 250 feet near the northwestern boundary to about 500 feet in the extreme southeastern part of the area. Down dip, the water in the lower sand beds is probably salty (pl. 4).

No wells are known to obtain water from the Claiborne in this area, but irrigation, municipal, and domestic wells obtain water from that formation in the Grand Prairie region farther south.

TERTIARY(?) UNDIFFERENTIATED DEPOSITS

The rocks designated as Tertiary(?) undifferentiated deposits correspond in general with those shown as Eocene undifferentiated on the State geologic map. They constitute the surface rocks of the western part of the Sand Hills area, cover much of the area near the Fall Line, and overlap the Atoka formation up to altitudes of about 400 feet, except where they have been removed by erosion. These deposits extend up the valleys in the Highland province much farther than is shown on the map (pl. 1), where they generally are greatly eroded, partly reworked, and too thin to furnish water even to farm wells. That an erosional topography had been formed on rocks of the Midway formation before the deposition of the Tertiary(?) undifferentiated sediments is suggested by a difference of about 33 feet in the altitude of the contact between the two units in test holes less than 100 yards apart.

The Tertiary(?) undifferentiated deposits consist for the most part of compact sand and interbedded clay, but local induration has produced friable sandstone and interbedded shale. Most of the sand and sandstone contains considerable clay and silt, but clean sand lenses occur locally. The rocks are bright orange to dark-reddish-brown in most places. A mottled surface is very common, with gray or yellow to orange areas surrounding dark-reddish-brown patches. The reddish-brown oxides appear to have been reduced along joint and along funnel-shaped and irregularly shaped seepage channels. The sand has small white to gray masses of clay intimately mixed with the brown-stained quartz grains and in this respect has a superficial resemblance to weathered arkose. The grains generally are rounded to subrounded and, except for the clay masses, are well to moderately well assorted. The clayey character of the sand seems to have resulted from weathering of part of the individual sand grains rather than from the deposition of sand and clay together. It seems likely that the clay masses were originally sand grains composed of hard shale. The clay and silt beds generally are gray but weather to light brown near the surface. Small lenses of clay and clay balls are common in some of the sandstone. A bed of loose sand, containing angular blocks of iron-oxide cemented sandstone, occurs locally in the upper part of the sequence and caps the hills that rise to an altitude of 400 feet about a mile southeast of Cabot.

The materials of these deposits generally may be distinguished from the upper part of the Quaternary alluvium by (1) their more thoroughly indurated character, (2) the presence in them of very coarse sand and their generally more sandy character, and (3) the presence of ironstone concretions and detrital fragments of iron-oxide cemented sandstone.

A typical section of these deposits, about 50 feet thick, is exposed along the road between Austin and Old Austin and is described as follows:

Section a quarter of a mile southeast of Austin, in NW¼ sec. 9, T. 4 N., R. 9 W.

	Thickness (feet)
Sand, light-brown	3
Sandstone, in angular, detrital blocks cemented with iron oxide, and in a matrix of loose sand	1
Sand, medium, silty, reddish brown	17
Clay, silty, gray, swells in water, lenticular beds	2
Sand, compact, medium to very coarse, mottled brown and gray; contains clay balls	5
Clay, plastic, gray	.5
Sand, silty, compact, medium to coarse, dark to orange-brown	2
Covered	5
Sandstone, friable, fine to medium, yellow to brown, containing hard gray spots	13
	48.5

The maximum thickness of the deposits thus far penetrated was at the locality of test hole 31, where about 219 feet was assigned to the Tertiary(?) undifferentiated deposits. No fossils have been found in the deposits, and the only evidence concerning their age lies in the fact that they overlap eroded beds of the Midway and Wilcox(?) formations and underlie the Quaternary deposits. Lithologically the rocks in part resemble the Detonti sand which is present southwest of Little Rock. The Tertiary (?) undifferentiated deposits cap hills up to an altitude of 400 feet east of Cabot but have been largely removed from the Atoka formation down to an altitude of about 300 feet northwest of Cabot. The deposits are quite unlike the clay and lignite beds typical of the Wilcox formation elsewhere in the embayment, and because of the uncertainty as to their age they are referred to in this report as Tertiary(?) undifferentiated deposits.

The Tertiary(?) undifferentiated deposits generally yield sufficient water for farm and household wells, but most of the aquifers are thin and lenticular and the depth of drilling or digging necessary to obtain water at any given place generally is unpredictable. In part of the Goodrum community, about 5 miles south of Cabot, these deposits are reported to contain so much clay that not even enough water for farm use can be obtained from them. On the other hand, at least one sand body of considerable size is present locally at the base of these deposits, as disclosed by test drilling 2 to 5 miles southeast of Cabot. Because of its interest in these sands as a possible source for a municipal water supply, the city of Cabot put down a number of additional test holes, a total of 9 being drilled in the area. (See logs of test holes 27-35, p. 31.)

As shown on the cross sections (pl. 6) the sand body appears to have a slope of about 75 feet per mile to the south. It is nearly a mile wide and 20 to 60 feet thick near the center. The sand crops out in Mill Creek and probably extends at least 3½ miles southward, where it was encountered by the C. C. Bratton farm well (well 171).

QUATERNARY DEPOSITS

Quaternary deposits cover most of the mapped area. They form the surface rocks of the Coastal Plain segment and the eastern part of the Sand Hills area, and extend across the Fall Line into the Interior Highlands area along the larger streams. The rocks consist of clay, silt, sand, and gravel deposited by Pleistocene and Recent streams. On the geologic map (pl. 1) the Quaternary deposits are divided into those generally containing basal beds of gravel and sand and those generally consisting only of fine-grained deposits. This distinction can be made only on the basis of subsurface data because the surficial deposits have a uniform lithology. The exact position of the line separating the two types of deposits is known in only a few places, and at many places subsequent information may shift it a mile or so one way or the other. Nevertheless knowledge of its approximate position should be helpful in guiding drilling, especially of wells for irrigation.

The reason for the presence of the basal gravel throughout most of the area and its absence near the Fall Line may be found in the difference in the size of the streams which deposited the materials in the area. The ancestral Mississippi River is thought to have excavated the Tertiary rocks between Crowleys Ridge and the bluffs west of the Arkansas River and to have partly refilled the valleys thus excavated with the Quaternary sand and gravel and later with finer sediments. However, the streams that were then tributary to the Mississippi River along the Fall Line, including the Little Red River, Cypress Creek, and Two Prairie Bayou, seem to have carried and deposited little coarse material, and the basal sand and gravel of the Quaternary deposits is present only in those areas formerly occupied by the master stream. Table 4 indicates that permeabilities in the Quaternary deposits decrease progressively toward the Fall Line, giving further evidence that the aquifer materials were deposited by the master stream and not by the tributaries.

The Quaternary deposits unconformably overlie rocks of Tertiary and Tertiary(?) age and are themselves not covered by younger materials. In the area of this study they attain a maximum thickness of about 156 feet. They consist of gray to light-brown sand and sand and gravel, reddish-brown fine sand, and gray, yellow, and red silt and clay. The basal sand and gravel beds, well shown on the cross sections A-A', B-B', and C-C' (pls. 2-3), generally constitute one-third to two-thirds of the total thickness of the deposits. They tend to be finer grained at the top and grade into the overlying silt or fine red sand, which is in turn overlain in most places by red or gray clay or interbedded red and gray clay, silt, and fine sand. The red clay, interbedded red and gray clay, silt, and fine sand of the Quaternary deposits that do not contain basal sand and gravel beds appear to be identical with the material that caps the sand and gravel of the principal aquifer.

The basal sand and gravel beds of the Quaternary deposits are by far the most important source of ground water in the area. All the irrigation wells and many of the domestic wells are developed in them. The capacities of the irrigation wells vary considerably but generally they are between about 400 gpm and 2,000 gpm. Near the Fall Line these basal sand and gravel beds generally are thinner and contain a higher percentage of fine materials, and wells of large yield are less likely to be developed there than farther out on the Coastal Plain.

GROUND WATER

Occurrence of Ground Water

Only a brief discussion of the principles of occurrence of ground water will be given in the present report. A comprehensive description of principles was given by Meinzer (1923), and most of the following discussion concerns their application to parts of Lonoke, Prairie, and White Counties.

In essentially all places and at various depths, which depend on local conditions, pore spaces in the rocks are completely filled with water, and the rocks are said to be saturated. The top of the zone of saturation in deposits not confined under artesian pressure is called the water table. The condition of saturation is true of clay as well as of sand and gravel; but, because of the difference in permeability, it is possible to develop wells only in the coarser materials. The permeability of a rock is its capacity to transmit water under pressure. Permeability is determined by the size, shape, and arrangement of openings among the particles composing the rock. For example, a bed of fine silt or clay may have a high porosity, which is the percentage of the volume of rock mass consisting of pore spaces to the volume of the whole rock mass; but, because of the small size of the openings and the adherence of the water to the rock grains, the permeability, or water-yielding capacity, may be very low. Well-sorted sand or gravel containing relatively large and interconnected openings transmits water freely. Therefore, water generally is obtained from wells finished in the more permeable rocks below the water table, and such water-bearing beds are called aquifers. Beds of fine-grained material, such as clay or silt, transmit ground water so slowly that they may confine under artesian pressure the water that occurs in an underlying aquifer and thus may be referred to as "confining beds."

Where water-bearing beds are inclined and are enclosed between relatively impermeable strata, such as silt and clay, the confined water may be under artesian pressure and it will then rise in wells above the level at which it occurs in the aquifer. If the altitude to which the water will rise is greater than the altitude of the land surface, wells will flow.

On the outcrop of water-bearing beds, or where the water-bearing beds are overlain by permeable materials from the surface down the water generally is unconfined and does not rise in wells above the water table.

These principles apply in all parts of Lonoke, Prairie, and White Counties, and some of the more important features of the occurrence of ground water in the area are mentioned below. Wells tapping the Atoka formation yield water most readily from fractured shale near the contact or along the bedding planes between the sandstone and the shale. Wells finished in the Tertiary(?) undifferentiated deposits and the Quaternary deposits yield water most readily from sand and gravel beds. The principal aquifer in the area is the sand and gravel at the base of the Quaternary deposits. A bed of silt and clay overlies these beds, and Tertiary clay generally underlies them. These beds of low permeability act as confining layers, and in places the water in the aquifer is under artesian pressure; that is, the water in a well will rise above the base of the confining layer. This is true in White county and the extreme northern part of Lonoke County. Elsewhere, the water level generally is below the upper confining layer, especially during the pumping season. To avoid confusion, the term "water table" will be used when referring either to the water table or to the artesian pressure surface (piezometric surface) as it appears on the illustrations and in the text of this report.

RECHARGE, MOVEMENT, AND DISCHARGE OF THE GROUND WATER

Ground water in Lonoke, Prairie, and White Counties is derived from rainfall upon the area and upon adjacent areas. A part of the precipitation runs off into streams, a part is returned to the atmosphere by evaporation and transpiration from vegetation, and a part infiltrates to the zone of saturation after the soil moisture has reached field capacity. In the zone of saturation, ground water is slowly but steadily moving, under the influence of gravity, from areas of intake toward areas of discharge. In the more permeable rocks the water moves with comparative freedom, although the movement is very slow compared to the flow of a stream.

Where some part of the water-bearing bed is exposed at the surface or comes in contact with another aquifer, stream, or lake, the water discharged naturally or through wells can be replenished periodically. Where the aquifer is more or less completely surrounded by clay or by other relatively impermeable materials, natural recharge may be slow, and the water taken from storage in the aquifer may not be replenished each year. The initial yields of wells in aquifers that are virtually cut off from natural recharge may be as large as or larger than those of wells in aquifers having adequate recharge areas, thereby giving an erroneous impression of the amount of water perennially available. Yields of wells obtaining water principally from storage instead of from recharge tend to decline as the water in storage is depleted.

Recharge by direct penetration of rainfall occurs along the Fall Line in Lonoke and White Counties and in other parts of the area where the materials overlying the aquifers are relatively permeable from the surface down. Relatively coarse material overlies the basal sand and gravel of the Quaternary deposits nearly everywhere along the Fall Line and locally in other places, but over much of the area these deposits are overlain by clay which impedes the penetration of rainfall.

Figure 3 shows hydrographs of water-level fluctuations in wells 200 and 266 and the daily rainfall for Searcy, in White County. A general rise in water levels occurs in both wells after periods of heavy precipitation, indicating recharge by direct penetration of rain. The rises lag some 2 or 3 weeks behind the periods of maximum precipitation, suggesting that the places of recharge are some distance from the wells. The fluctuations caused by individual rains seem to be superimposed on a general seasonal trend of high water levels in winter and spring and low water levels in summer and fall, and a noticeable rise after a rain is more likely to be shown upon the rising curve of winter than upon the declining curve of summer. A much closer correlation between the precipitation and the water levels probably would be noted if a record of precipitation in or near the area of recharge were available, because there is a great variability in intensity and duration of summer thundershowers within short distances. A hydrograph (fig. 4) of well 176 tapping Tertiary (?) undifferentiated deposits shows a rapid rise in water level immediately after the heavier rains. The recharge affecting this well probably occurs in the vicinity of the well.

Recharge by water from streams and lakes probably still is of minor, although of increasing, importance in the area covered by the present report, because the regional water table (pl. 7) is nearly everywhere higher than the water levels in these bodies of surface water except during periods of flood. However, as the water level adjacent to them is lowered by pumping, to the extent that the hydraulic gradient is reversed, there probably is an increasing amount of recharge from many of the streams and lakes. Reference to plate 7 shows that there probably is some recharge from the White River in the southeastern corner of the mapped area where pumping for rice irrigation has lowered water levels below stream level.

There is very little recharge to the Quaternary deposits by subsurface inflow from adjacent formations. The Tertiary(?) undifferentiated deposits along the Fall Line and in the Sand Hills area furnish some recharge to the Quaternary deposits, but their generally fine grain greatly restricts the amount of water passing through them. The amount of recharge from the Atoka formation also is small because of the low permeability of the formation and because a variable thickness of the Tertiary(?) undifferentiated deposits generally lies between the Atoka formation and the Quaternary deposits.

The shape and slope of the water table in Quaternary deposits in parts of Lonoke, Prairie, and White Counties, during the spring of 1955, is shown on plate 7 by contours drawn on the water table. Each contour line has been drawn through points on the water table having the same altitude. The altitudes of measuring points were taken from quadrangle maps, and the contours probably would be much smoother if it were possible to run instrumental levels to the measuring points of all wells. Ground water moves in the direction of maximum slope, which is at right angles to the contours. The contour map indicates that the water table slopes regionally toward the southeast except in the southern part of the area, where it slopes toward the south into the large cone of depression formed by heavy pumping in the Grand Prairie region (Engler, Thompson, and Kazmann, 1945, pl. A). Within the area shown on plate 7 another, but smaller, cone of depression has been formed by pumping for rice irrigation west of Des Arc in Prairie County. Water is moving toward the center of this cone from all directions. The spacing of the contours over the entire area shown on plate 7 indicates an average regional hydraulic gradient of about 3.2 feet per mile.

This hydraulic gradient, together with other known factors, can be used to determine the rate of movement of the ground water as follows. The quantity of water flowing through a given cross-sectional area of water-bearing material is computed by the formula:

$$Q = pAv = PIA$$

in which Q is the quantity of water, p is the porosity of the material, A is the cross-sectional area, v is the average velocity of the ground water, P is the coefficient of permeability, and I is the hydraulic gradient. The approximate rate of movement of the water through the gravel and sand can be obtained by application of the above formula transposed as follows:

$$v = \frac{PI}{p}$$

If P is defined in gallons per day per square foot under a hydraulic gradient of 100 percent and a temperature of 60° F (Meinzer's units), if I is given in feet per mile, and if p is given in percentage, v will be given in feet per day by the following formula:

$$v = \frac{PI}{395p}$$

The average coefficient of permeability from 7 aquifer tests in deposits of Quaternary age in the area studied is about 1,200 gpd-ft.[2] The hydraulic gradient is about 3.2 feet per mile. For an assumed porosity of 35 percent in the area, the average velocity of the ground water can be computed by the above formula as follows:

$$v = \frac{1{,}200 \times 3.2}{395 \times 35} = 0.3 \text{ foot per day}$$

Movement of water in the Tertiary(?) undifferentiated deposits is down dip to the southeast. Movement of water in the Atoka formation is to the southeast toward the Fall Line which generally is down the dip of the beds. (See pl. 1.)

A considerable amount of natural discharge of ground water still occurs in the mapped area, chiefly by evaporation and transpiration where the water level is sufficiently close to the land surface, and by hydraulic discharge through seeps and springs. Water may be taken into the roots of plants directly from the zone of saturation or from the capillary fringe, and may then be discharged by transpiration. In the central part of the area shown on plate 7 the depth to the water table is so great that there is little or no transpiration or evaporation from the zone of saturation or the capillary fringe. However, natural discharge through seeps and springs occurs near the Fall Line from the Atoka formation and from Tertiary(?) undifferentiated deposits. Seeps and springs along the main and tributary stream channels discharge ground water from Quaternary and Tertiary(?) undifferentiated deposits and largely support the base flow of the streams. Along the Little Red River in White County and along Cypress Creek the contours shown on plate 11 bend upstream, indicating that there is discharge of ground water into the streams. The contours also indicate discharge of ground water into the White River above Des Arc. Near Des Arc the ground-water level probably is at about the same altitude as the river level under normal conditions. Thus, there probably is some movement of water into the Quaternary deposits during flood stages and some ground-water discharge into the White River during low stages. In the extreme southeastern corner of the area the water levels are below the White River, and the Quaternary deposits receive water from the river.

Much ground water is discharged from the area by subsurface flow into the large cone of depression in the Grand Prairie region. This movement is indicated by the slope of the water table (pl. 7). From the average permeability determined from aquifer tests, the average slope of the water table along the southern edge of the area from the water-table contour map, and the average aquifer thickness from the logs of wells, it is computed that about 27 million gallons of water per day flows from this area into the Grand Prairie cone of depression. This is about as much as is used for irrigation in the entire area covered by the present report.

HYDROLOGIC PROPERTIES OF THE WATER-BEARING MATERIALS

The quantity of water that a water-bearing formation will yield depends upon the hydrologic properties of the materials composing the formation. The two hydrologic properties of greatest significance with respect to rate of yield are the coefficients of permeability and storage.

Meinzer's coefficient of permeability, P, may be expressed in field terms as the numhole. In some wells the casing is perforated or slotted below the water level, but in most wells a screen or strainer is used to provide a greater intake area and to inhibit movement of sand and gravel from the aquifer into the well. The tiled-cased wells generally terminate in sand and are left open at the bottom. Water enters at the bottom and through the tile joints.

Dug wells constructed for domestic supplies are common in areas where the Atoka formation and the Tertiary(?) undifferentiated deposits are relatively near the land surface. They generally are 30 to 36 inches in diameter and are 30 feet or less in depth. They are curbed with wood, tile, or concrete.

Irrigation and public-supply wells generally are drilled with hydraulic rotary rigs or with auger and sand-bucket rigs. With the latter rig the hole is augered to the water table and the screen and casing are bailed down into the water-bearing material. Many of these wells are gravel packed.

Aquifer Tests

The coefficient of permeability of the Tertiary(?) undifferentiated deposits was determined at well 220 in the western part of the Sand Hills area (pl. 5) in Lonoke County. Four other tests were made in Lonoke and White Counties to determine the coefficients of permeability in deposits of Quaternary age. Other tests were made a few miles south of the area of the present report during the period 1940 to 1944 (Engler, Thompson, and Kazmann, 1945, P. 43). The aquifer test data collected during this investigation were analyzed by means of the formula for nonsteady state flow (Theis, 1935). Table 4 summarizes the results of tests made in and near the report area.

In general the coefficients of permeability increase from the Fall Line southward into the Grand Prairie region. The lower values near the Fall Line are indicated also on the map of the water table (pl. 7) by the closer spacing of the contour lines.

An average coefficient of permeability for the Quaternary aquifer in northern Lonoke, northern Prairie, and southeastern White counties (see table 4) is about 900 gallons per day per square foot.

FLUCTUATIONS OF WATER LEVELS

The water levels in parts of Lonoke, Prairie, and White Counties are not stationary but rise and fall much like the water level in a lake or reservoir. However, over a long period of time a condition of approximate equilibrium is established between the amount of water that is added annually to ground water in storage and the amount that is discharged annually. In general, the water level rises when the amount of recharge

TABLE 4
Locations of Aquifer Tests and Computed Coefficients of Permeability

Well No.	Location	Aquifer thickness (ft.)	Field coefficients of permeability (gpd/ft.²)	Stratigraphic unit
220	Sec. 28, T. 4 N., R. 9 W.	12	1,000	Tertiary(?) undifferentiated deposits
201	Sec. 15, T. 4 N., R. 8 W.	75	1,200	Quaternary deposits
270	Sec. 31, T. 6 N., R. 7 W.	69	700	Do
256	Sec. 2, T. 6 N., R. 7 W.	40	500	Do
312	Sec. 20, T. 8 N., R. 5 W.	50	1,000	Do
—	Sec. 32, T. 2 N., R. 6 W.	—	1,600	Do
—	Sec. 11, T. 2 N., R. 9 W.	—	1,900	Do
—	Sec. 17, T. 1 N., R. 7 W.	—	2,100	Do
—	Sec. 9, T. 1 S., R. 5 W.	—	1,800	Do
—	Sec. 32, T. 2 S., R. 4 W.	—	2,200	Do
—	Sec. 3, T. 3 S., R. 4 W.	—	2,000	Do
—	Sec. 18, T. 3 S., R. 2 W.	—	1,500	Do
—	Sec. 24, T. 5 S., R. 3 W.	—	1,200	Do
—	Sec. 30, T. 5 S., R. 4 W.	—	2,200	Do
—	Sec. 23, T. 6 S., R. 2 W.	—	2,300	Do

exceeds the amount of discharge, and it declines when the discharge is greater than the recharge. Thus, net changes in the water levels in wells reflect the extent of depletion or replenishment of the ground-water reservoir.

Several factors control the amount of rise of water levels in wells. The principal ones are the precipitation that passes through the soil and is added to the zone of saturation, and the influent seepage that reaches the underground reservoir from streams. The relation between the amount of precipitation and the levels at which the water stands in wells is complicated by several factors. During a long dry period the soil moisture becomes depleted through evaporation and transpiration. When a rain does occur, the soil-moisture deficiency must be replenished before any water can descend through the soil to the aquifer. Where the water-bearing formation is covered by relatively impermeable clay, as is the aquifer in the deposits of Quaternary age in parts of Lonoke, Prairie, and White Counties, the water levels are not affected immediately or strongly by seasonal or yearly changes in rainfall. Instead, there is a time lag and the magnitude of the fluctuations is not as large as that of fluctuations in unconfined aquifers elsewhere.

The principal factors controlling the decline of water levels are the quantity of water pumped from wells, the quantity of water transpired directly from the water table by plants, and the quantity discharged as effluent seepage into the streams. In the Lonoke, Prairie, and White Counties area the quantity pumped from wells is much larger than the other two factors combined. As a result, ground-water levels afford an index of the extent of withdrawal of water for irrigation. As irrigation with water from wells increases, the water levels decline until gradients are readjusted to the increased withdrawal. If the irrigation development reaches the point where the pumpage exceeds the natural ground-water recharge, the water levels show net declines from year to year. Thus water-level measurements afford a close check on the relation between the available water supply and its development.

Plate 7 shows a cone of depression, west of Des Arc, that is caused by concentrated pumping for irrigation. There has been a continuing decline of water levels in this area since about 1938 (Counts and Engler, 1953). There also has been an increase in rice acreage in this area from 6,000 acres in 1938 to 12,200 acres in 1954. The continuing decline in water levels seems to be caused largely by the increase in the rate of pumping and by the fact that water levels have not yet become adjusted to the new rates of withdrawal. There is little doubt that in the Des Arc area water is being withdrawn from the aquifer faster than it can flow in from present sources of recharge. The hydrographs in figure 5 show the water-level fluctuations in five rice-irrigation wells finished in deposits of Quaternary age in northern Lonoke County. The average annual water-level decline in the 5 wells has been about 1 foot. The hydrographs in figure 5 show that the water levels have fallen steadily except during the period 1932 to 1935, when rice acreage decreased from 16,000 to 12,500 acres, and the period 1950 to 1[illegible]51, when the rice acreage decreased from abo[illegible]3,000 to 31,500 acres.

The average decline in water levels in Lonoke County was about 2 feet from the spring of 1954 to the spring of 1955 and about 0.6 foot from the spring of 1955 to the spring of 1956. The average decline in wells in Prairie County was about 2.2 feet from the spring of 1954 to the spring of 1955, and about 0.9 foot from the spring of 1955 to the spring of 1956. The decrease in the decline from 1955 to 1956 is attributed mainly to the decrease in rice acreage during 1955. In White County there was an average water-level rise of about 0.9 foot from the spring of 1955 to the spring of 1956, but there was some decline in the heavily pumped areas. The rise occurred over the remaining part of the county after, and presumably in response to heavy spring rains.

Water levels in wells in the Tertiary(?) undifferentiated deposits and in the Atoka formation generally have shown only minor fluctuations during the 2 years of record. The wells are of small diameter and no large quantities of water are withdrawn from them; consequently, the water-level fluctuations reflect chiefly conditions of natural recharge and discharge. During the drought years 1952-54 a number of shallow wells in both formations are reported to have gone dry. Generally it is necessary only to deepen such a well to obtain domestic supplies even during years of less than average precipitation.

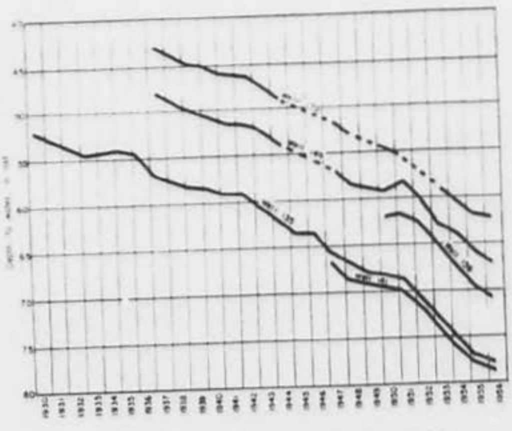

Fig. 5 Hydrographs of fluctuations of water levels in wells 135, 141, 149, 159, and 172 finished in deposits of Quarternary age in northern Lonoke County

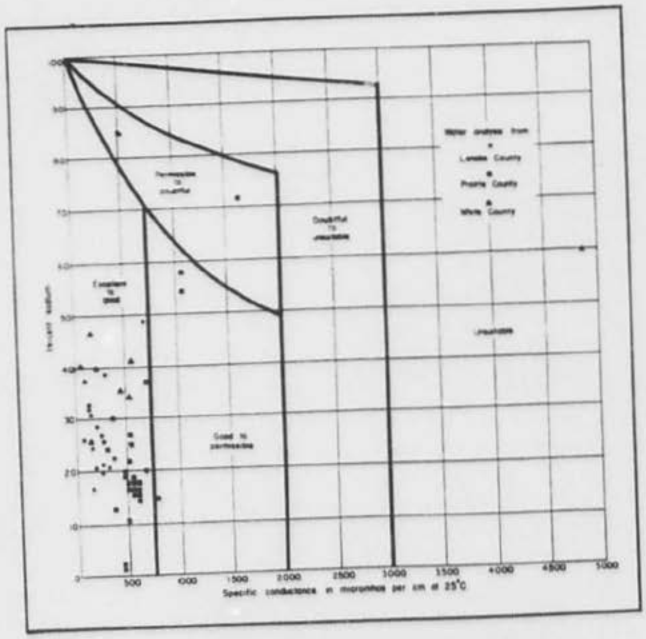

Fig. 6 Classification of ground waters for irrigation use in parts of Lonoke, Prairie, and White Counties (after Wilcox)

UTILIZATION OF GROUND WATER

The total amount of water withdrawn from wells in the area is estimated to be about 30 mgd. The rates of use, in mgd, for different purposes are: public supplies 0.5, domestic 1, irrigation 28.5, of which 24 mgd is for the irrigation of rice and 4.5 mgd for the supplemental irrigation of row crops.

These figures are based on city pumpage records, an estimated per capita consumption of 30 gpd per person for domestic use, and the acreage of rice and row crops irrigated.

Public Supplies

There are five municipalities in the area that use ground water as a source of public supply. They range in population from 720 to 1,612.

Beebe, White County. — Beebe, a community of about 1,200 inhabitants, uses water at the rate of about 150,000 gpd. It is supplied from 2 wells (236 and 237) tapping sand in deposits of Quaternary age at depths of 96 and 99 feet. Their reported yields are 1,250 and 1,850 gpm. The water is pumped from the wells, by turbine pumps driven by electric motors, into a 100,000-gallon elevated tank for distribution. A chemical analysis of water from each well is given in table 8.

Bradford, White County. — Bradford is supplied by one 6-inch well (325), 80 feet deep, which yields water from sand and gravel in deposits of Quaternary age. The water is pumped from the well by an electrically driven turbine pump into a 30,000-gallon ground reservoir. It is pumped from the ground reservoir into a 50,000-gallon elevated tank for distribution through the mains. A chemical analysis of water from the well is given in table 8.

Cabot, Lonoke County. — The city of Cabot, which has a population of about a thousand, is supplied by 2 drilled wells, 214a which is 1,700 feet deep and 214b which is 1,085 feet deep. These wells obtain water from sandstone and shale in the Atoka formation at a reported rate of about 35 gpm each. The water is pumped directly into a 50,000-gallon elevated tank, without being treated, for distribution through the mains. The wells did not supply enough water for the needs of Cabot during the summers of 1954 and 1955, and the city has tried, unsuccessfully, to obtain a larger supply from the present well field. In the fall and winter of 1955 the city drilled a number of test holes in Tertiary (?) undifferentiated deposits to outline more definitely the aquifer disclosed by the test drilling done by the U. S. Geological Survey. (See p. 10-11). The possibility of developing municipal supplies from that aquifer is discussed on page 22.

Des Arc, Prairie County. — Des Arc, a community of about 1,612, is supplied with water from an 8-inch well (51) about 120 feet deep, tapping sand and gravel in deposits of Quaternary age. The yield of the well is reported to be 450 gpm. The water is pumped from the well, by an electrically driven turbine pump, into a 100,000-gallon ground-storage reservoir and then into a 75,000-gallon elevated tank for distribution. Water is used at the rate of about 50,000 gpd. A chemical analysis of the water is given in table 8.

Kensett, White County — Water is supplied to the city of Kensett from 2 wells (292 and 293) tapping Tertiary(?) undifferentiated deposits. Well 292 is 182 feet deep and has a reported yield of about 80 gpm, and well 293 is 217 feet deep and yields 210 gpm. The wells are equipped with electrically driven turbine pumps which pump the water directly into mains that are connected to a 35,000-gallon elevated storage tank.

Domestic Supplies

Many wells in the area furnish water for domestic use. The estimated average rate of pumping for all domestic use is about 1 mgd. Most of the wells, 2 to 6 inches in diameter, are drilled and cased with steel or iron pipe. There are a few dug wells in the western part of the Sand Hills area in Lonoke County that obtain water from the Tertiary(?) undifferentiated deposits. Some of these wells go dry during extended droughts. In the northern part of White County there are many driven wells, 1¼ inches in diameter, that yield water from the upper part of the Quaternary deposits. Many of the wells are equipped with a small electrically driven jet pump and some with rope and bucket.

Irrigation Supplies

There are about 200 irrigation wells in the area considered in the present report. They are pumped at an average rate of about 28.5 mgd. for the irrigation of rice and other crops.

The average yield of the wells is about 970 gpm. Table 5 gives the yields of 75 irrigation wells characteristic of those in the area. In table 6 the same data are grouped according to whether the yields were reported, estimated, or measured. If the 29 measured wells constitute a fair sample, then the reported yields were too high and the estimated yields too low.

TABLE 5

Yields of Irrigation Wells in Parts of Lonoke, Prairie, and White Counties

Yield of wells (gpm)	Number of wells			
	Lonoke	Prairie	White	Total
Less than 600	3	3	7	13
600- 800	5	8	1	14
800-1,000	7	8	3	18
1,000-1,200	6	6	1	13
1,200-1,400	1	2	3	6
1,400-1,600	0	3	0	3
1,600-1,800	0	3	1	4
More than 1,800	1	0	3	4
Total	23	33	19	75

There are many factors that determine the yields of wells, including the method of construction, the character and thickness of the water-bearing formation, the diameter of the casing, the material used for casing, the type and size of perforations or screen and placement thereof, the quality of the water (whether noncorrosive or corrosive or whether likely to form incrusting material readily), the development and finishing of the well, the age of the well, and the distance between wells that are being pumped (mutual interference).

POSSIBILITIES OF FURTHER DEVELOPMENT

Although ground water now plays a large role in the economy of the area, considerable additional water can be developed from the several aquifers and in the different localities, as outlined in the following paragraphs.

Wells yielding about 400 to 1,700 gpm can be developed in the sand and gravel deposits of Quaternary age throughout a large part of the area (pl. 1). In two areas of concentrated pumping for rice irrigation, one west of Des Arc and the other in the central part of the area at the southern boundary, water levels have been lowered to such an extent that any substantial increase in pumping may result in local overdevelopment. In one area of unknown but probably small extent southeast of Bald Knob water in the Quaternary deposits is too salty for most uses (see p. 26 and fig. 8), but elsewhere in the area this aquifer will support many additional irrigation wells.

The areas in Arkansas that are in danger of overdevelopment, or are already overdeveloped, are certain areas of concentrated pumping for rice cultivation. According to Engler and others (1945, p. 4), it takes about 1.8 acre-feet of water per acre to grow rice in the Grand Prairie area, and probably at least 2.0 acre-feet per acre in the rest of the rice-growing areas of Arkansas where the soils are more sandy. Bartholomew and others (1945, p. 17) found that during one of the driest summers (1943) only a little more than 1 acre-foot of water per acre was required for the supplemental irrigation of such crops as cotton, corn, soybeans, and lespedeza. During most summers the supplemental-irrigation requirements for these crops are about 0.5 to 0.8 acre-foot per acre. Because much of the area covered by this investigation is considered to have a soil too sandy or a topography too rolling to be suitable for growing rice, and because much of it receives local recharge, there appears to be much less likelihood of overdevelopment of ground water than in the Grand Prairie region to the south.

TABLE 6

Average Yields of Irrigation Wells in Parts of Lonoke, Prairie, and White Counties as Reported, Estimated, or Measured

County	Number of wells	Reported yield	Number of wells	Estimated yield	Number of wells	Measured yield	Total number of wells	Weighted average yield of all wells
Lonoke	9	1,200	9	685	5	875	23	928
Prairie	8	1,350	9	860	16	935	33	1,015
White	10	1,250	1	900	8	420	19	882
Total number of wells and weighted average yield	27	1,262	19	780	29	782	75	965

Irrigation wells of moderate to large yields can be developed in the eastern part of the Sand Hills area where the basal sand and gravel of the Quaternary deposits is present (pl. 1). Test drilling disclosed the presence of the sand and gravel in places earlier thought to be outside the area in which irrigation wells could be developed. The log of test hole 13 indicates the excellent character and considerable thickness of these deposits in part of the Sand Hills area. Supplemental irrigation would most likely be beneficial to pasture, hay, and strawberries presently grown in this area and might allow the growing of many other crops.

Irrigation by wells developed in the basal sand and gravel of the Quaternary deposits in White County has been common only during the last 2 or 3 years. Although this aquifer generally is thinner and less permeable here than it is in the rice-growing areas of Prairie and Lonoke Counties, the yields of most wells are sufficient to irrigate strawberries and other small fruits and vegetables as well as cotton, corn, and soybeans. Much additional development appears to be possible in this area.

It is possible that deep wells tapping soft water in deposits of the Wilcox formation and the Claiborne group may be developed. The necessity for drilling wells in these older deposits to greater depths than in the Quaternary deposits and the generally greater drawdowns that would be caused by the pumping of quantities of water sufficient for irrigation make these units much less attractive than the shallower Quaternary deposits as sources of irrigation water. However, the softness and general absence of iron make the water especially desirable for municipal supplies. Des Arc is the only sizable community in the area, and this city and the towns and cities just south of the area along U. S. Highway 70 may wish to explore these Tertiary units. It should be emphasized that in the areas indicated on the map (pl. 1) fresh water is not known to occur in deposits of the Wilcox and the Claiborne, because no wells or water-test holes have been drilled there to that depth. The areas shown have been sketched in from the available electric logs of oil-test holes which indicate the presence of fresh water—probably soft — in these deposits.

Ground water in quantities sufficient for irrigation, municipal, and industrial uses is not generally available in Quaternary deposits that do not include the basal sand and gravel, nor in the Tertiary(?) undifferentiated deposits, nor the Atoka formation. For this reason the cities of Cabot, Austin, and Ward (pl. 1) have had difficulty in finding a source of municipal water supply. Austin and Ward have no municipal systems, largely because no adequate source could be found, and wells in the Atoka formation have proved to be inadequate to supply the municipal system at Cabot. An aquifer in Tertiary(?) undifferentiated deposits, located by test drilling south of Austin and southeast of Cabot, may be of future importance to these cities, and possibly also to Ward, as a source of municipal water.

Assuming an average thickness of 20 feet, a width of 1 mile, and a storage coefficient of 0.15, a rough approximation of the amount of water in transient storage in the aquifer may be made. If a well large enough to furnish water for a municipal supply were located near well 220, in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 28, T. 4 N., R. 9 W., it would draw from roughly 1 square mile of aquifer, containing approximately 600 million gallons of water. If there were no recharge to the aquifer and if three-quarters of the stored water could be recovered, then 100 gpm could be pumped for about 8 or 9 years. Practically all the water withdrawn from the aquifer would come from the north, or updip, because the aquifer dips to the south at about 60 to 75 feet per mile. There is not enough information available to estimate the recharge to the aquifer, but it is likely to be considerable because the aquifer crops out in the vicinity of Mill Creek and presumably would receive water by infiltration from the stream and its tributaries. Also, there is probably some recharge from direct penetration of rainfall through the overlying sandy beds. It appears likely that present and potential recharge would be sufficient to support several wells, each of 100-gpm capacity.

For every mile that a well is located south of well 220, the stored water available to the well is doubled. A well as far south as the site of test hole 33, in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 4, T. 3 N., R. 9 W., would have a storage capacity of perhaps 1,500 million gallons to draw from, or more than 20 years' supply at 100 gpm if 75-percent recovery is assumed. The amount of recharge available at this location would be somewhat greater than that at the former location.

A pumping test at well 220, the location first mentioned, indicated a coefficient of permeability of 1,000 gpd per square foot, and even with an aquifer thickness of only 12 feet at this location a yield of about 100 gpm could be obtained with a larger pump in a properly constructed well. About a quarter of a mile east, in the deeper part of the aquifer, wells of larger capacity can be developed. At the site of test hole 33 a well yielding several hundred gallons a minute could be developed.

CHEMICAL QUALITY OF GROUND WATER

The general chemical quality of the ground water in parts of Lonoke, Prairie, and White Counties is indicated by 102 analyses of water from 98 wells listed in table 8. Included are analyses of 5 water samples from wells in the Atoka formation, 15 from wells in the Tertiary(?) undifferentiated deposits and 78 from wells in the Quaternary deposits, 4 of which were sampled on 2 different dates.

The analyses give the dissolved mineral constituents, which determine the fitness of the water for municipal, industrial, agricultural, and domestic uses, without reference to the sanitary quality of the sample. From most wells a single sample is regarded as being representative of the chemical quality of the water, because the concentration of the dissolved minerals in water from individual wells seldom changes appreciably. Exceptions to this generality include very shallow wells in which the concentration is modified by rainfall, wells tapping aquifers that are subject to salt-water encroachment, or wells recharged by streams whose mineral concentration fluctuates. Four wells in Quaternary deposits (7, 23, 191, 325, table 8) were resampled to check on possible changes in mineral quality with time. The changes indicated by these analyses are minor for all constituents except iron.

Temperatures of most of the samples were taken at the time of collection; they ranged from 61° to 67° F, most of them being 63° to 64° F.

Chemical Constituents in Relation to Use

Iron.—Iron is dissolved from many rocks and soils and from pipes through which the water is pumped and distributed. The quantity of iron in ground water may differ greatly from place to place, even in water from the same formation. Large amounts of iron may interfere with efficient operation of zeolite-type water softeners and may prove as detrimental as either excessive hardness or dissolved solids. Iron in water may cause reddish-brown stains on white porcelain or enameled ware and fixtures, and on clothing or other fabrics washed in the water. The U. S. Public Health Service drinking water standards for interstate carriers specify a maximum concentration of 0.3 part per million (ppm) of iron and manganese together in potable water. Excessive iron may be removed readily from most water by aeration and filtration. Unless otherwise noted, values of iron reported in table 8 are for total iron. The iron content of water samples in this area ranged from less than 0.02 to 32 ppm. Of a total of 102 samples, 42 contained less than 1.0 ppm; 48 contained 1.0 to 5.0 ppm; and 12 samples contained more than 5.0 ppm iron.

Water from numerous wells in Quaternary deposits in several areas of Arkansas has a high iron content. This is especially surprising in water that is neutral or alkaline. The amount of iron carried in solution in the ground water varies greatly — in wells located close together, at different horizons in the same well, and with time from the same stratum of the same well. The variation of quality with time is indicated in four wells in Quaternary deposits that were resampled. Water taken from well 325 on July 28, 1955, had an iron content of 1.3 ppm; 3 months later the water contained 3.1 ppm. The initial analysis of water from well 7 indicated an iron content of 1.6 ppm and about a year later it was 0.87 ppm. In well 23 the initial analysis indicated 0.46 ppm iron; about a year later it was 2.0 ppm. Water from well 191 had an iron content of 4.9 ppm. in 1951; 3 years later the iron content was 0.12 ppm.

Calcium and magnesium.—Calcium is found in all natural water, generally in greater quantities in water that is in contact with limestone, dolomite, and gypsum. Magnesium is dissolved from many rocks, particularly dolomitic rocks. The concentration of calcium and magnesium in water largely determines the hardness of the water. These two ions react with soap to form an objectionable scum, and are largely responsible for the formation of boiler scale. The analyses show a range in calcium content from 2.2 to 264 ppm and in magnesium from 0.6 to 76 ppm.

Sodium and potassium.—All natural water contains compounds of sodium and potassium. The fitness of water for most industrial or domestic uses is not affected by moderate amounts of these two elements, though quantities larger than 50 ppm may cause foaming in steam-boiler operation. For high-pressure-boiler feed water a concentration of not more than 2 to 3 ppm has been recommended. Good irrigation water should not contain sodium in a concentration greater than 60 percent of the cations on an equivalent basis (Magistad and Christiansen, 1944, p. 8-9). The analyses indicate a sodium range of 1.8 to 901 ppm. All but 23 samples contained less than 50 ppm. Water from 7 wells had more than 60 percent sodium. The samples were not analyzed for potassium, and in table 8 the amounts of this element are included with the sodium.

Bicarbonate and carbonate.—Bicarbonate and carbonate occur in water as a result of the solvent action of carbon dioxide in rain or surface water reacting with the minerals present in the earth, such as calcite and dolomite, and forming calcium and magnesium bicarbonate. Carbonate is rarely present in appreciable quantities in natural water. Bicarbonate in moderate concentrations has no effect for most uses; however, large quantities of sodium bicarbonate will cause foaming and priming in boilers.

Bicarbonate is the chief anion in all but the most highly mineralized water in this area. It ranged from 80 to 218 ppm in water from the Atoka formation, from 6 to 231 ppm in water from the Tertiary(?) undifferentiated deposits, and from 13 to 631 ppm in water from the Quaternary deposits. Carbonate was present in only 4 samples, all from Quaternary deposits.

Sulfate.—Sulfate, when present in excessive quantities, makes the water unpalatable, and it combines with calcium to form a hard boiler scale. The concentration of sulfate is highly variable, but it is low in all formations throughout the area. Only about 16 percent of the samples had more than 15 ppm of this ion, and the range was from 0.4 to 107 ppm. Thus, the greatest concentration of this substance was far less than the upper limit of 250 ppm allowable under the U. S. Public Health Service drinking water standards.

Chloride.—Since the chlorides of calcium, magnesium, and sodium are readily soluble, chloride is normally present in most water. Sodium chloride (common table salt) in higher concentrations gives water a salty taste and also causes foaming and priming in boilers. Water high in chloride may be corrosive to plumbing and steam boilers and harmful to irrigated crops. The concentration limit recommended by the U. S. Public Health Service for drinking water is 250 ppm. The samples from wells in the area studied ranged from 2.2 ppm to 1,870 ppm, all but 7 samples having a concentration less than the recommended limit.

Nitrate.—Nitrate present in amounts greater than about 45 ppm may cause cyanosis in infants if the water is used to prepare food formulas (Maxcy, 1950, p. 271). Nitrate in natural water is commonly considered to be a final oxidation product of nitrogenous organic materials and may suggest surface pollution. Fertilizers are sometimes a source of nitrate in ground water, especially in shallow wells. Only 3 of the 102 samples analyzed contained more than 45 ppm of nitrate, and 89 samples contained less than 3 ppm.

Dissolved solids.—Dissolved solids is the residue after evaporation of the water and consists mainly of dissolved mineral matter and some organic material and water of crystallization. Water containing less than 500 ppm of dissolved solids is satisfactory for most uses. Water containing more than 1,000 ppm generally requires treatment to make it suitable for most domestic and industrial uses. Irrigation water having more than 2,000 ppm may be injurious to some plants. In the 102 water samples analyzed, the dissolved solids ranged from 15 to 3,770 ppm. All but 11 samples contained less than 500 ppm, but 6 samples contained more than 1,000 ppm.

Hardness.—Hardness probably is one of the most important factors to be considered in choosing a water supply for either municipal, industrial, or domestic use. It is easily recognized by the increased quantity of soap required to produce lather, by the formation of the insoluble curd that is objectionable in all washing processes, and by the deposits of insoluble salts when the water is heated or evaporated. In addition to its soap-consuming capacity, hard water is objectionable because it causes the formation of scale in boilers, water heaters, radiators, and pipes, with a resulting loss in flow, loss in heat transfer, and possible boiler failure.

Calcium and magnesium usually are the principal constituents causing hardness in water. Iron, aluminum and a few other constituents likewise cause hardness but generally are present in much smaller quantities than calcium and magnesium. Hardness equivalent to the bicarbonate and carbonate is called carbonate hardness; the remainder of the hardness which is generally due to sulfates, chlorides, and nitrates of calcium and magnesium, is called noncarbonate hardness.

Water that has a hardness of less than 60 ppm generally is considered to be soft. Water having a hardness ranging from 60 to 120 ppm may be considered moderately hard; although hardness in this range does not seriously interfere with the use of the water for many purposes, it does increase the amount of soap consumed, and the treatment for its reduction may be profitable for laundries and necessary for industries that require soft water. Water that has a hardness of 120 to 200 ppm is noticed by nearly everyone and is considered hard. Water with hardness greater than 200 ppm needs some softening before it can be used satisfactorily for many purposes, although it is used without treatment for domestic purposes and for irrigation.

Analyses of water from wells sampled indicate a range in hardness from 9 to 971 ppm, and water from wells in the Quaternary deposits generally has a hardness in excess of 200 ppm. Thirty-five samples had noncarbonate hardness.

Specific conductance.—The specific conductance of water, a measure of its capacity to conduct electricity, is dependent on the concentration and degree of ionization of the different minerals present. Specific conductance is an indication of the concentration of dissolved solids in water. Values for specific conductance of the samples analyzed, expressed as micromhos at 25°C, range from 33.4 to 6,220.

Hydrogen-ion concentration.—The hydrogen-ion concentration is an index of the acidity or alkalinity of water and must be known for proper treatment for coagulation at water-treatment plants. The hydrogen-ion concentration generally is expressed as the pH, which is the logarithm (to the base 10) of the reciprocal of the hydrogen-ion concentration in moles per liter. For practical purposes, the pH scale ranges between 0 and 14, denoting various degrees of acidity or alkalinity of a solution. A pH of 7 is considered to denote the neutral point. Values below 7 and approaching 0 denote increasing acidity, whereas values from 7 to 14 denote increasing alkalinity. Water having a low pH is likely to be corrosive to metal. The pH of the samples analyzed ranged from 5.0 to 8.4, but for most samples it was slightly above 7.0.

Suitability of Water for Irrigation

Because about 95 percent of the ground water in the area studied is used for irrigation, the suitability of the water for that purpose is of much interest. Among the more critical chemical characteristics of a water for use in irrigation are the percent sodium and the concentration of dissolved minerals as measured by the specific conductance. Certain trace elements that are known to be toxic to some plants, such as boron, generally are not present in the ground water of Arkansas and were not determined in the samples.

All the water samples collected from irrigation wells in Lonoke, Prairie, and White Counties are plotted (fig. 6, p. 19) on a diagram developed by Wilcox (1948), on which percent sodium is plotted against specific conductance.

Nearly all of the more than 60 samples analyzed fall within the classification "excellent to good." The three samples within the "good to permissible" classification are from wells in the extreme southeastern part of the area, where there is evidence of contamination from deeper, salty water. The one sample in the "permissible to doubtful" classification also is from a well in that area. No samples are in the "doubtful to unsuitable" classification, and only one (from well 286 southeast of Bald Knob) is in the "unsuitable" classification. This well was drilled for rice irrigation but the water proved to be much too salty for that purpose.

There is an interesting distribution of the plotted points on the diagram classifying the water from the three counties. The water from irrigation wells in Prairie County generally is more highly mineralized than that from the other counties, but it has a lower percent sodium. There is a clustering of the points in the classification between 15 and 20 percent sodium and between 500 and 650 micromhos in specific conductance. The water from irrigation wells in Lonoke County is the least mineralized, generally having a specific conductance less than 400 and a percent sodium between 20 and 40. The water from irrigation wells in White County is more variable than that from the other two counties, both in specific conductance and in percent sodium.

Most soils in this part of Arkansas are deficient in calcium carbonate and require "liming." On such soils the use of a calcium bicarbonate water for irrigation is beneficial.

Most of the water sampled from irrigation wells in the area is of the calcium bicarbonate type.

Chemical Characteristics of Ground Water in the Several Formations

Both the type and the amount of the mineral content of any ground water are determined by the kind and amount of soluble minerals in the rocks through which the water has traveled and the length of time it has been in contact with those minerals. Therefore, a close correlation exists between the mineral character and content of the ground water and the aquifer in which it occurs, the direction and rate of movement of the water in the aquifer, the character of recharge and discharge and the places where they occur, and the places where contaminating or diluting water enters from other aquifers or confining beds. Some of these relationships are shown graphically on the bar diagram (fig. 7) and others are pointed out in the following paragraphs describing the mineral quality of the water in each of the important aquifers.

Quaternary deposits.—Throughout Arkansas the water in deposits of Quaternary age is typically of the calcium bicarbonate type. In the area of the present investigation it is more or less typical, the calcium content ranging from 20 to 80 ppm and the bicarbonate from 75 to 375 ppm. The magnesium content generally ranges from 5 to 25 ppm and the sodium from 20 to 30 ppm. The sulfate content generally is low, that of most samples falling in the range of 2 to 15 ppm. The chloride content is variable but generally ranges from 10 to 30 ppm.

In the area considered in this report, water from the Quaternary deposits in Lonoke County is the least mineralized, that in Prairie County the most mineralized, and that in White County more variable but generally intermediate (fig. 7). In a general way, the degree of mineralization increases with distance from the recharge area, being least in northwestern Lonoke County and greatest in the eastern part of the area near the White River. The water from wells in Quaternary deposits near their surface contact with the Tertiary(?) undifferentiated deposits south of Cabot is notably low in dissolved minerals. On the water-table contour map (pl. 7) the crowding of contours suggests that an important amount of recharge occurs in this area, and this probably accounts for the "near-rain-water" character and mineralization of the ground water. A general increase in mineral load southeastward in the direction of movement of the ground water can be expected, because of the greater volume of sediments the water has passed through and the longer period of time it has been in contact with them. However, the relatively large and abrupt increases in salinity southeast of Bald Knob and south of Des Arc probably result from other causes.

The occurrence of salty water southeast of Bald Knob was called to the attention of the author by Mr. E. D. Munger, who had drilled a well (286) for rice irrigation. The well yielded 1,200 gpm, and for the first year the well water was mixed with surface water and produced a satisfactory yield of rice. The second year was drier, little surface water was available, and the rice crop was killed by the water from the well. The only other irrigation wells in the area are nearer Bald Knob, and the water from them is not salty. It is reported that several wells driven for domestic supplies also yielded water so salty that they were abandoned. Field tests for chloride were made on all domestic and stock wells in the area that could be sampled. The sampling points and the chloride content of the water, in parts per million, are shown on figure 8.

It is reported that water from shallow dug wells in this area was evaporated for salt during Civil War days. The sites of two such "salt works," in the SE¼ sec. 1, T. 7 N., R. 5 W., and in the SE¼ sec. 34, T. 8 N., R. 5 W., were visited. Depressions 4 to 5 feet deep are present where the old wells are said to have caved in, and the large iron kettles, said to have been used in the evaporating process, are being used for various purposes on nearby farms.

The source of the salt in water of Quaternary age in this area has not been determined. So far as known the Quaternary sediments were not deposited under conditions that would yield soluble saline minerals, and it seems more likely that the salt water is coming from older formations. The nearest deep oil-test holes have encountered salt water in the Nacatoch sand and in Paleozoic formations, but too little is known of the subsurface structure to locate a fault, or faults, which might permit this salt water to rise into the Quaternary deposits. That such faults may exist is pointed out by Caplan (1954, p. 38) on the basis of the suggested displacement be-

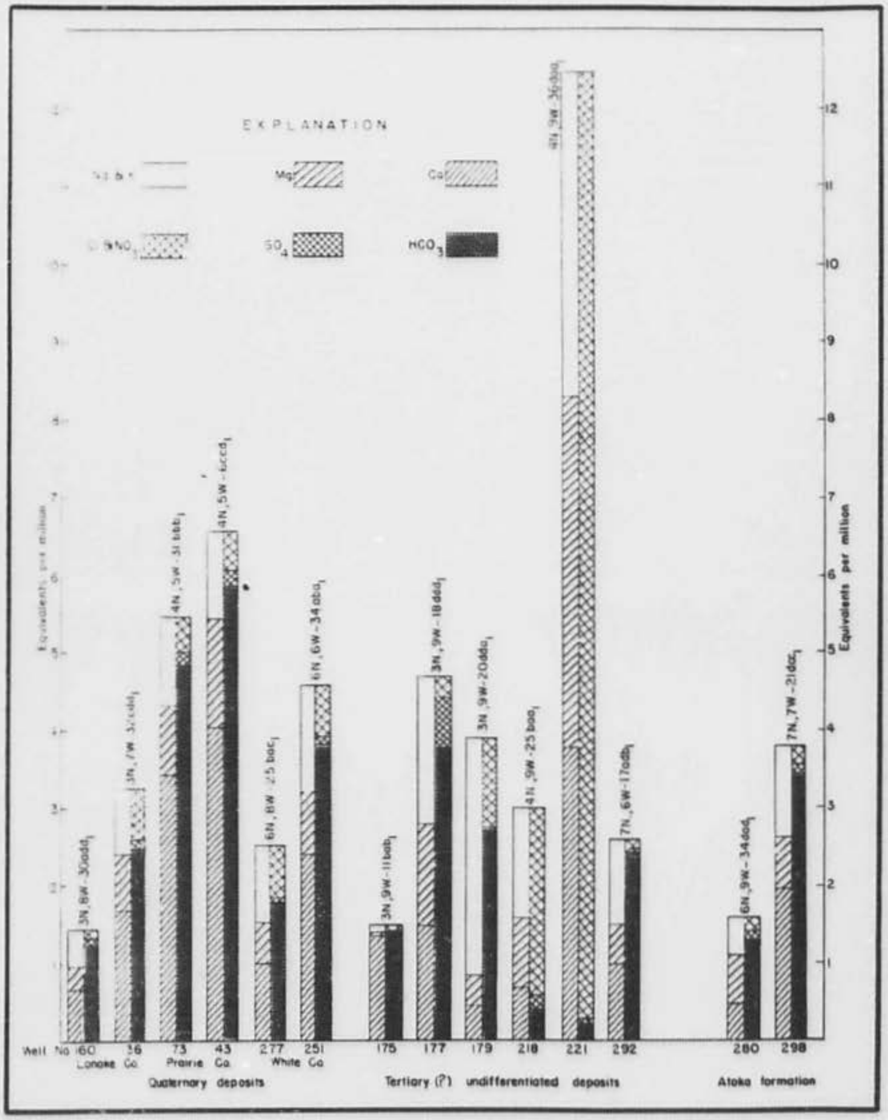

Fig. 7 Graphic representation of selected chemical analyses of ground water from the several aquifers

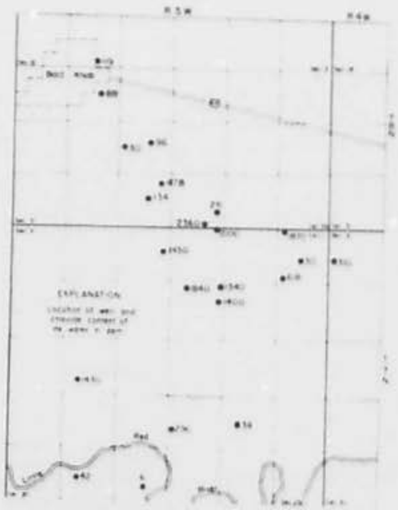

Fig. 8 Map showing sampling points and chloride content (in ppm) of water from domestic wells tapping deposits of Quarternary age in White County southeast of Bald Knob

tween the J. N. Watkins No. 1 well, sec. 18, T. 5 N., R. 2 W., and the Tatum and Watkins No. 1 Miller well, sec. 7, T. 5 N., R. 2 W., in western Woodruff County.

An electric log of the Carter Oil Co. core-test hole in the NW¼, SE¼, sec. 24, T. 5 N., R. 5 W., shows salty water at a depth of 250 feet and probably less salty water at a depth of 150 feet. Thus, all the water in Tertiary beds is probably salty in the vicinity of this test hole.

The analysis of water from the Munger well (286) and analyses of water from several of the domestic wells in that area were plotted on a logarithmic nomograph and on a trilinear water-analysis diagram. The marked difference in the shape and point of crossing of the curves on the logarithmic nomograph, and the fact that the points on the trilinear diagram did not plot on a straight line, indicate that the water is not a simple mixture from two sources only.

About 4 miles south of Des Arc a small group of irrigation wells yield water that is somewhat mineralized (see wells 5, 7, and 18, table 8). The analyses for the McGahhey wells (5 and 7) were plotted with that for the DeVore well (9), which is a normal well in Quaternary deposits about 3 miles west of the McGahey wells, on the logarithmic nomograph and on the trilinear water-analysis diagram. On the latter diagram the points fell in a straight line, and on the former the curves for all three wells were almost identical in shape and position except for the increase in sodium and chloride in the McGahhey wells. Thus, it appears that the mineralized ground water in this area is normal ground water to which sodium chloride water has been added. The presence of a reportedly unplugged oil-test well in sec. 2, T. 3 N., R. 5 W., has led local residents to attribute the salty water to contamination from the oil-test well. It seems very likely that here the water from Quaternary deposits is contaminated with salt water from deeper horizons, but whether the salt water is finding its way upward along boreholes or along faults or other natural courses has not been established.

Tertiary(?) undifferentiated deposits.—The chemical quality of water from wells in the Tertiary(?) undifferentiated deposits is highly variable, not only in concentration but in character as well, as is shown graphically in figure 7. The waters from six wells, selected as being more or less representative of this unit and classified on the basis of the concentration (epm) of a single ion or two or more ions, comprise a calcium bicarbonate water of low mineralization (well 175), a bicarbonate water of moderate concentration (well 177), a sodium bicarbonate water of moderate concentration (well 179), a sodium chloride water of moderate concentration (well 218), a chloride water of relatively high concentration (well 221), and a calcium sodium bicarbonate water of relatively low concentration (well 292). As judged by samples from the 14 wells in these deposits, the water from them cannot be typed as to character. About all that can be said is that the sulfate generally is low and the total mineralization generally is low to moderate. The concentration of dissolved solids ranged from 45 to 1,040 ppm, but only two samples contained more than 300 ppm. The pH ranged from 5.1 to 8.1 and averaged 6.9. Some of the water is reported to be corrosive to metal pipes and fixtures. Nevertheless, over much of their area of outcrop the Tertiary(?) undifferentiated deposits yield water of a satisfactory quality for farm wells.

Atoka formation.—The water from wells in the Atoka formation generally is calcium magnesium sodium bicarbonate water of low to moderate mineralization (fig. 7). The water from wells of relatively high yields generally is of better quality than that from those of low yields. Although it is difficult to find sufficient quantities of water for a good farm well in some areas, where water is found in sufficient quantity it is generally of satisfactory quality.

TEST HOLE 8

Owner: Mr. Bellome
Location: NW¼SW¼SE¼ sec. 18, T. 4 N., R. 9 W.
(Lonoke County)
Altitude: 312 ft.
Driller: Counts and McDonald

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Soil, surface	3	3
Clay, sandy, red	8	11
Clay, sandy, yellowish	22	33
Midway formation:		
Gumbo, blue	5	38

TEST HOLE 9

Owner: Mr. Doyle
Location: NW¼NE¼NW¼ sec. 18, T. 4 N., R. 9 W.
(Lonoke County)
Altitude: 287 ft.
Driller: Counts and McDonald

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Soil, surface, and sandy silt	3	3
Clay, sandy	5	8
Clay, tan	8	16
Atoka formation:		
Shale, black	6	22

TEST HOLE 10

Owner: Dale Marshall
Location: NE¼NE¼NE¼ sec. 25, T. 4 N., R. 10 W.
(Lonoke County)
Altitude: 282 ft.
Driller: Counts and McDonald

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Soil, surface	3	3
Clay	2	5
Sand, fine, gray	6	11
Sand, fine, tan; wet	22	33
Sand, very fine, blue	10	43
Midway formation:		
Gumbo, blue	5	48

TEST HOLE 11

Location: SW¼SW¼SW¼ sec. 22, T. 3 N., R. 10 W.
(Lonoke County)
Altitude: 230 ft.
Driller: Counts, Dennis, Edds, and Stephens

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, silty, gray	5	5
Clay, red	15	20
Clay, silty, reddish grading into light-brown	5	25
Clay, light-brown	8	33
Clay, hard and tough, mottled red and brown	2	35
Clay, tough, red	3	38
Clay, tough, red and gray, interbedded with silt and very fine sand	16	54
Clay and silt, interbedded with very fine sand	14	68
Sand	5	73
Clay, dark-red	1	74

TEST HOLE 12

Location: NE¼NE¼NE¼ sec. 27, T. 3 N., R. 10 W.
(Lonoke County)
Altitude: 250 ft.
Driller: Troy Mullens & Son

	Thickness (feet)	Depth (feet)
Quaternary(?) deposits:		
Clay, silty, containing gray iron-oxide concretions	7	7
Clay, red	8	15
Clay, red, containing interbedded light-brown streaks	6	21
Clay, reddish-brown	3	24
Clay, light-brownish-gray	1	25
Clay, reddish-brown	30	55
Clay, light-greenish-gray	5	60
Clay, silt, and interbedded very fine, gray and light-brown sand	15	75
Sand, fine, and interbedded silt and clay	5	80
Sand, clay, silt, and fine gravel containing wood fragments	8	88
Midway(?) formation:		
Clay, dark-blue-gray	37	125

TEST HOLE 18

Location: SE¼SE¼SE¼ sec. 31, T. 4 N., R. 8 W. (Lonoke County)
Altitude: 255 ft.
Driller: Counts, Edds, Reed, and Dennis

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Clay, silty, yellowish-brown	8.5	8.5
Sand, silty and clayey, red	4.5	13
Sand, fine, pinkish-brown	6	19

TEST HOLE 19

Location: SE¼SE¼SE¼ sec. 32, T. 4 N., R. 8 W. (Lonoke County)
Altitude: 250 ft.
Driller: Counts, Edds, Stephens, and Dennis

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Silt, clayey, yellow	3	3
Clay, silty, light-brown	2	5
Clay, silty and sandy, light-brown with lighter mottling	5	10
Clay, very sandy, red	4	14
Sand, fine, pink	5	19

TEST HOLE 20

Location: NE¼NE¼NE¼ sec. 4, T. 3 N., R. 8 W. (Lonoke County)
Altitude: 250 ft.
Driller: Counts, Edds, Stephens, and Dennis

	Thickness (feet)	Depth (feet)
Quaternary(?) deposits:		
Silt, clayey, yellow	14	14
Sand, fine, clayey, pink	3	17
Sand, fine, red	5	22
Clay, reddish-brown; contains black spots of organic matter	1	23
Sand, fine, reddish-brown	1	24

TEST HOLE 21

Location: SE¼SE¼SE¼ sec. 35, T. 4 N., R. 8 W. (Lonoke County)
Altitude: 352 ft.
Driller: Counts, Edds, Stephens, and Dennis

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, silty, yellowish-brown	2	2
Clay, silty, fine, sandy, gray	8	10
Clay, fine, sandy, pink	1	11
Clay, silty, reddish-brown	2	13
Sand, fine, clayey, orange-red	2	15
Sand, fine, orange	13	28
Clay, red; contains some interbedded sand	1	29
Clay, sandy, very calcareous, red	11	40

TEST HOLE 22

Location: SE¼SE¼SW¼ sec. 30, T. 4 N., R. 8 W. (Lonoke County)
Altitude: 275 ft.
Driller: Counts, Edds, and Stephens

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Silt, clayey, yellow	4	4
Clay, silty, yellow	10	14
Clay, silty, slightly calcareous, red	8	22
Sand, very fine, reddish-brown	5	27
Sand, very fine, yellowish-brown	5	32

TEST HOLE 23

Location: NE¼NW¼NW¼ sec. 36, T. 4 N., R. 9 W. (Lonoke County)
Altitude: 300 ft.
Driller: Counts, Edds, and Stephens

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Silt, sandy, clayey, yellow	7	7
Silt, sandy, clayey, red, mottled with light clay	4	11
Clay, silty, yellow	2	13
Clay, silty, dark	1	14
Clay, silty, slightly sandy, yellow. Wet at 30 ft.	20	34

TEST HOLE 24

Location: NE¼SE¼SE¼ sec. 29, T. 4 N., R. 8 W. (Lonoke County)
Altitude: 240 ft.
Driller: Counts, Edds, and Stephens

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Soil, surface	2	2
Silt, clayey, yellow	4	6
Clay, silty, yellow, mottled with light clay	5	11
Sand, very fine, silty; contains a little yellowish-tan clay	5	16
Sand, very fine, silty, light-gray	5	21
Clay, silty, yellow	2	23
Clay, slightly silty, dark-pink	11	34

TEST HOLE 25

Location: NW¼SE¼SW¼ sec. 27, T. 4 N., R. 8 W. (Lonoke County)
Altitude: 240 ft.
Driller: Counts, Edds, and Stephens

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Silt, clayey, yellow	7	7
Silt and clay, mottled	5	12
Clay, silty, red	1	13
Clay, silty, dark-pinkish	6	19

TEST HOLE 30

Owner: Alex [illegible]
Location: [illegible] SE¼ SE¼ sec. 21, T. 4 N., R. 9 W.
([illegible] County)
Altitude: [illegible]
Driller: H. L. [illegible]

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Clay, [illegible], red	5	5
Clay, [illegible] and gray mottled	5	10
Sand, fine; contains flecks of black organic material	5	15
Sand, fine to medium; contains some organic material	10	25
Sand, medium to coarse, yellowish	7	32
Midway formation:		
Clay, noncalcareous, dark-gray	23	55
Clay, dark-gray; with thin, hard sandstone [illegible] at 58 ft.	30	85
Clay, calcareous, dark-gray; contains very thin beds of white clay and hard sandstone	5	90
Clay, calcareous, dark-gray	30	120

TEST HOLE 31

Owner: E. M. Cherry
Location: SW¼ SW¼ SE¼ sec. 28, T. 4 N., R. 9 W.
(Lonoke County)
Altitude: 250 ft.
Driller: H. L. Brown

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Silt, clayey, brown	2	2
Clay, gray; cracks with red-stained surfaces	3	5
Clay, gray	5	10
Clay, gray, containing thin brown ironstone layers	5	15
Sand, fine, gray	5	20
Clay, silty, noncalcareous, light-gray	10	30
Clay, gray, containing thin brown ironstone layers	5	35
Clay, silty, medium-gray	5	40
Clay, containing thin brown ironstone layers	7	47
Sand, fine, gray	4	51
Clay, light-gray	4	55
Clay, sandy, gray and white speckled	5	60
Sand, fine, gray	5	65
Sand, mostly fine, some medium	15	80
Sand, fine, and interbedded sandy clay; contains much wood, bark, and other organic material	13	93
Clay, sandy	2	95
Sand, fine to medium	55	150
Sand, fine, with interbedded gray clay	25	175
Clay, sandy, soft, light-gray	5	180
Sand, very fine, and soft gray clay	15	195
Clay, medium-gray	10	205
Sand, very fine, and soft gray clay	10	215
Clay, medium-gray	4	219
Midway formation:		
Clay, noncalcareous, dark-gray	10	229
Clay, calcareous, medium- to dark-gray	6	235

TEST HOLE 32

Owner: O. J. McMillen
Location: SE¼ SW¼ SW¼ sec. 33, T. 4 N., R. 9 W.
(Lonoke County)
Altitude: 295 ft.
Driller: H. L. Brown

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Silt, clayey, orange	3	3
Clay, sandy, gray and brown mottled	2	5
Clay, sandy, gray	3	8
Clay, silty, gray and yellow	2	10
Sand, fine, light-brown	1	11
Clay, gray, containing sandy brown ironstone layers	8	19
Sand, fine	1	20
Clay, sandy, gray, containing brown layers	5	25
Sand, fine	1	26
Clay, medium-gray	1	27
Sand, fine	3	30
Sand, fine, containing interbedded sandy gray clay	15	45
Clay, sandy, light-gray and brown	4	49
Sand, fine to medium, yellow	1	50
Clay, sandy, gray	2	52
Sand, fine to medium, gray	3	55
Clay, sandy, gray	25	80
Sand, fine, and interbedded sandy clay	20	100
Sand, medium to coarse	9	109
Clay, silty; contains lignite particles and thin hard layers at 123 ft., 127 ft., 134 ft., and 140 ft.	31	140
Clay, sandy, gray; contains very thin beds of white clay and specks of lignite	27	167
Midway formation:		
Clay, noncalcareous, very dark gray	13	180
Clay, calcareous, dark-gray	5	185
Clay, soft, calcareous, light-gray	5	190

TEST HOLE 33

Owner: H. L. Mulkey
Location: NE¼ NW¼ SE¼ sec. 4, T. 3 N., R. 9 W.
(Lonoke County)
Altitude: 285 ft.
Driller: H. L. Brown

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Clay, silty, gray with bright red and yellow stains	11	11
Gravel and sand; contains ironstone detrital material	1	12
Clay, gray and yellow	3	15
Clay, sandy, olive-tan, and one thin bed of very fine sand	8	23
Clay, silty, medium-gray	6	29
Clay, sandy, soft, light-gray; contains ironstone hard spot at 32 ft.	6	35
Clay, sandy, soft, light-gray; contains a little interbedded very fine sand	25	60
Clay, compact, gray	5	65
Clay; contains a little fine sand and clay pebbles	5	70
Sand, fine, and gravel composed of clay pebbles	3	73
Clay, sandy, gray	12	85
Sand, silty, very fine, gray	20	105
Sand, medium to very coarse	15	120
Sand, medium	30	150

TEST HOLE 39

[redacted]

Driller: H. L. Brown

	Thickness (feet)	Depth (feet)
Quaternary(?) deposits:		
Clay, slightly silty, yellow to light-brown	8	8
Clay, light-gray and brown	6	14
Clay, light-gray with brown streaks	7	21
Clay, silty, light-gray to buff	15	36
Sand, fine to medium, buff	9	45
Sand, mostly medium, some fine and coarse, gray, but yellow at bottom	10	55
Midway(?) formation:		
Clay, very sandy, calcareous, gray; contains Paleocene Foraminifera	5	60
Sandstone and interbedded sandy clay, calcareous	5	65
Sandstone, calcareous, dark-gray; contains a little interbedded clay	10	75
Clay, calcareous, fissile in part, dark-gray; contains Paleocene Foraminifera	20	90

TEST HOLE 40

[redacted]

Driller: H. L. Brown

	Thickness (feet)	Depth (feet)
Quaternary(?) deposits:		
Silt, clayey, mostly yellow but containing a little unoxidized light-gray silty clay	7	7
Silt, gray; contains brown sand streaks	23	30
Sand, fine, clayey; contains interbedded yellow clay	5	35
Clay, light-gray	23	58
Midway(?) formation:		
Clay, noncalcareous, black, dull soillike appearance	2	60
Sand, mostly fine to medium	15	75
Sand, medium to coarse; contains interbedded clay	8	83
Clay, sandy, gray	7	90
Clay; contains coarse sand and small pebbles	3	93
Sand, fine to very coarse	8	101
Clay, gray	4	105
Clay, sandy, noncalcareous, gray	14	119
Sand, very fine; contains interbedded soft gray clay	2	121
Clay, soft, sandy, glauconitic, pyritic, slightly to very calcareous, gray	13	134
Rock. No sample	1	135

TEST HOLE 41

Location: NE¼ SW¼ sec. 23, T. 6 N., R. 8 W.
(White County)

Driller: H. L. Brown

	Thickness (feet)	Depth (feet)
Quaternary(?) deposits:		
Clay, gray to brown, oxidized along cracks	5	5
Clay, light-gray; contains some oxidized yellow	11	16
Clay, noncalcareous, red	9	25
Clay, noncalcareous, buff	15	40
Sand, fine, light-brown	5	45
Sand, fine to medium, dark-brown	40	85
Midway(?) formation:		
Sand, fine, dark-gray	20	105
Clay, soft, noncalcareous, blue-gray	15	120
Clay, soft, blue-gray; contains calcareous flecks	15	135
Clay, calcareous, blue-gray and green mottled; contains some hard spots	15	150
Sand, fine; contains interbedded clay	13	163
Sandstone	1	164

WELL 2

Owner: Plunket Farms, Inc.

Location: SE¼ NW¼ NE¼ sec. 3, T. 3 N., R. 4 W.
(Prairie County)

Altitude: 187 ft.

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, some blue clay balls	45	55
Sand, coarse, gray	20	75
Sand, light-blue	5	80
Sand and gravel, light-blue. Rocks at 106 ft.	26	106

WELL 11

[redacted]

Altitude: 207 ft.

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Clay, streaks of red sand	20	30
Clay, light-yellow	15	45
Sand, coarse, blue	55	100
Sand, coarse, blue; and gravel	16	116

WELL 33

(b) (6) [redacted]

Altitude: [illegible] ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Clay, red	40	50
Sand, blue	49	99
Sand, coarse, blue, and gravel	29	128

WELL 36

(b) (6) [redacted]

Altitude: [illegible] ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay	25	25
Sand, fine, quick	15	40
Sand	28	68
Sand, some clay and sand at 100 ft.	32	100
Sand, coarse, blue, and gravel	34	134

WELL 38

(b) (6) [redacted]

Altitude: 176 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, fine	30	40
Sand, coarse, and gravel	40	80
Sand, coarse, blue, and gravel	16	96

WELL 39

Location: SW¼ NE¼ NE¼ sec. 4, T. 4 N., R. 4 W.
(Prairie County)
Altitude: 181 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Clay, yellow	10	20
Sand mixed with clay, blue	10	30
Sand, coarse, blue	30	60
Sand, coarse, blue, and gravel	38	98

WELL 40

Location: SE¼ NE¼ NE¼ sec. 5, T. 4 N., R. 4 W.
(Prairie County)
Altitude: 195 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	4	4
Sand, fine, yellow	31	35
Sand, coarse, yellow	10	45
Sand, coarse, blue, and a little gravel	17	62
Sand, coarse, blue, and gravel	36	98

WELL 46

(b) (6) [redacted]

Altitude: 209 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Clay, red	15	25
Clay, white	5	30
Sand, blue	40	70
Sand, blue, and gravel	10	80
Sand, blue	20	100
Sand, coarse, blue, and gravel	10	110
Claiborne(?) Group:		
Sand, packed, and clay	2	112

WELL 57

(b) (6) [redacted]

Altitude: 212 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, pack, yellow	15	25
Clay, red	5	30
Clay, blue	10	40
Sand, blue	20	60
Sand, and some gravel	10	70
Sand, coarse, blue, and gravel	42	112

WELL 61

(b) (6) [redacted]

Altitude: 212 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Clay, light-yellow	30	40
Clay, blue	8	48
Sand, blue	27	75
Sand, coarse, blue	5	80
Sand, coarse, blue, and gravel	25	105
Sand, light-blue, with blue clay at 121 ft.	16	121

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	15	15
Clay and sand, blue	25	40
Sand, blue	45	85
Gravel and sand, coarse, gray	7	92
Sand, coarse, and gravel	3	95
Rock, cement	5	100
Gravel and sand, coarse	10	110
Clay and gravel	2	112
Sand and gravel	8	120
Sand, coarse	8	128

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Clay, blue	32	42
Sand, blue	18	60
Sand, coarse, blue, and gravel	44	104

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, yellow	20	30
Sand, blue	38	68
Sand, blue, and some gravel	32	100
Sand, coarse, blue, and gravel	23	123

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	17	15
Sand, pack, yellow	35	50
Sand, gray, streaks of clay	11	61
Sand, gray and gravel	24	85
Sand, coarse, gray, and gravel	17	102

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay	5	5
Clay, blue	25	30
Sand, blue, and some gravel	20	50
Sand, coarse, blue, and gravel	52	102

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, yellow	45	55
Sand, and some gravel	30	85
Sand, blue, and gravel	26	111

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, yellow	30	40
Clay, blue	15	55
Sand, blue	37	92
Sand, coarse, blue	23	115
Sand, coarse, and gravel	22	137
Claiborne(?) group:		
Clay, blue, at 137 ft.		

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	15	15
Sand, pack	25	40
Clay, red, white, and blue	15	55
Sand, blue	10	65
Clay, blue and yellow, with sandy streaks	20	85
Sand, coarse, yellow, and gravel	39	124

WELL 153

[redacted]

Altitude: [illegible] ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, yellow	40	50
Clay, red	5	55
Clay, blue	10	65
Sand, blue, and clay	23	88
Sand, blue, and gravel	4	92
Clay, blue, and gravel	8	100
Sand, blue	10	110
Sand, coarse, blue, and gravel	22	132

WELL 154

[redacted]

Altitude: [illegible] ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Clay, red	50	60
Sand and clay, yellow	31	91
Clay and yellow sand streaks	14	105
Sand, yellow; gravel, clay and rock at 135 ft.	30	135

WELL 155

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, yellow	36	46
Sand, pack, and water	2	48
Clay, red and blue	20	68
Sand, fine, yellow	42	110
Clay, blue	2	112
Sand, yellow, and gravel	36	148

WELL 157

[redacted]

Altitude: 248 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, yellow with clay streaks	45	55
Clay, blue	20	75
Sand	10	85
Sand, coarse, yellow, and gravel	33	118
Sand, blue	5	123
Sand, coarse, blue, and gravel	30	153

WELL 158

[redacted]

Altitude: 250 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	10	10
Sand, yellow	30	40
Clay, red	15	55
Clay, blue	15	70
Clay, blue, and gravel	35	105
Sand, coarse, yellow, and gravel	20	125
Sand, dark-yellow, and gravel	19	144

WELL 161

[redacted]

Altitude: 249 ft.
Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay	30	30
Clay with sand streaks	12	42
Sand, yellow, and water	4	46
Clay, red and blue	24	70
Sand, yellow	8	78
Clay, red	7	85
Sand, yellow, and gravel	15	100
Sand, coarse, and gravel, yellow	20	120
Clay, blue	2	122
Sand, yellow, and gravel	15	137

WELL 162

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, surface	20	20
Sand, yellow	40	60
Clay, red	15	75
Sand, coarse, yellow, and gravel	83	158

WELL 164

[redacted]

Driller: Lilly Bros.

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay and sand	35	35
Sand and water	5	40
Clay, red and blue; clay rock at 66 ft.	30	70
Sand and gravel	19	89
Sand, yellow, and gravel	21	110
Sand, coarse	10	120
Gravel	6	126

WELL 279

[redacted]
Driller: O. A. Moore

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, gray	18	18
Clay, red	6	24
Clay, dark-gray	7	31
Sand, fine	42	73
Sand, medium fine	7	80

WELL 270

[redacted]
Driller: Troy Mullens (log from owner)

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay	17	17
Sand, very fine, reddish, with a few white gravel; gets coarser downward	23	40
Sand, coarse, red, few gravel	20	60
Sand, gray, with few gravel	5	65
Sand, coarse, gray, and pea gravel	21	86
Midway formation:		
Clay, tough, black, at 86 ft.		

WELL 293

Owner: Town of Kensett
Location: NE¼SE¼NW¼ sec. 17, T. 7 N., R. 6 W. (White County)
Altitude: 224 ft.
Driller: Layne-Arkansas Co.

	Thickness (feet)	Depth (feet)
Tertiary(?) undifferentiated deposits:		
Soil and clay	32	32
Sand, fine	20	52
Sand and hard flint gravel	12	64
Gumbo	31	95
Rock	2	97
Sand, fine	21	118
Shale, sandy	33	151
Sand, fine, blue	14	165
Sand, medium, and lignite	52	217

WELL 301

Owner: Missouri Pacific Railroad
Location: NE¼SW¼SW¼ sec. 25, T. 7 N., R. 7 W. (White County)
Altitude: 219 ft.
Driller: ? (log from owner)

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay	30	30
Sand, fine	20	50
Sand, coarse, pebbles and cobbles	12.5	62.5

WELL 310

Owner: Missouri Pacific Railroad
Location: SE¼NW¼NW¼ sec. 20, T. 8 N., R. 5 W. (White County)
Altitude: 220 ft.
Driller: ? (log from owner)

	Thickness (feet)	Depth (feet)
Quaternary deposits:		
Clay, yellow	30	30
Sand and gravel	1	31
Atoka formation:		
Rock, hard	30	61
Rock, soft, black	9	70
Rock, hard	70	140
Rock, soft, black	12	152
Rock, hard, with 8-inch crevice at 193 ft.	73	225

28	4addl	W. Scarda		215			Qt			do		Irr
(29)[1]	5abbl	Joe Calley	Lilly Bros.	220	130	18-12	Qt	18.66	4-26-54	do	950	Irr
30	6abal	Joe Mallard		220			Qt	52.48	11-23-55	do		Irr
31	10cdcl	Ralph Otto		206			Qt	43.57	3-29-55	do		Irr
32	11aadl	Dale Greenwald	Frank Ehlers	205		18-12	Qt	27.38	3-31-55	do		Irr
33[1]	28bcdl	John Perry	Lilly Bros.	226	128	18-12	Qt	61.17	11-23-55	do		Irr
(34)	28dccl	E. E. Rogers	do	226		18-12	Qt	65.74	3-29-55	do	600	Irr
35	33abcl	G. S. Hanks		228			Qt	66.08	3-29-55	do		Irr
(36)[1]	33dddl	E. E. Rogers	Lilly Bros.	233	131	18-12	Qt	71.22	3-29-55	do		Irr
37	34cacl	Floyd Brothers	do	234	125	16-12	Qt	71.68	12-9-55	do		Irr
	T. 4 N., R. 4 W.											
38[1]	1addl	J. W. Miller	do	176	96	18-12	Qt	11.10	12-9-55	do		Irr
39[1]	4aacl		do	181	98	18-12	Qt	11.80	12-9-55	do		Irr
40[1]	5aadl		do	195	98	18-12	Qt	20.94	12-9-55	do		Irr
41	7adcl			195			Qt	27.02	5-17-55	None		N
42	12aadl			177	20	1.25	Qt	7.90	5-17-55	do		N
	T. 4 N., R. 5 W.											
(43)	6ccdl	W. E. McMullen		203		18-12	Qt	37.92	3-30-55	Turbine	1,100	Irr
(44)	7aabl	Marvin Tallent	Layne-Ark. Co.	205	116	18-12	Qt	44.84	3-30-55	do	800	Irr
45	7cdcl	Fred Rodgers		212		18-12	Qt	51.62	12-6-55	do		Irr
46[1]	7dcbl	Earnest Pertle	Lilly Bros.	209	112	18-12	Qt			do		Irr
47	8ccdl	Wayne Tate		210			Qt	57.07	12-5-55	do		Irr
(48)	8dccl	Guy DeVore		211			Qt	52.84	3-30-55	do	530	Irr
(49)	9cdcl	W. B. Patterson	Lilly Bros.	210		18-12	Qt	48.59	3-30-55	do	600	Irr
50	10bacl	W. B. Rasberry		200			Qt			do		Irr
(51)	14aabl	City of Des Arc		200	120±	8	Qt			do		PS
(52)	16bccl	Howard Ford		212			Qt	56.62	3-30-55	do	1,000	Irr
53	16ccbl	Mr. Norsworthy		212			Qt	56.37	12-9-55	do		Irr
54	17babl	J. B. Sims		210			Qt	55.93	12-7-55	do		Irr
55	17ccbl	do		210		16-8	Qt	59.93	12-5-55	do		Irr
56	17ddcl	do		212			Qt	56.49	12-5-55	do		Irr
57[1]	18addl	Tom Simmons & Son	Lilly Bros.	212	113	18-12	Qt	56.93	3-30-55	do		Irr
(58)	18ddal	do		210		18-8	Qt	59.64	12-5-55	do	1,050	Irr
59	19ccal	Mrs. Delsie Bell		216		16-8	Qt	58.55	12-5-55	do		Irr
60	19ccbl	Albert Bell		215			Qt	59.05	12-9-55	do		Irr
61[1]	19dabl	J. W. Cauley	Lilly Bros.	212	121	18-12	Qt	60.11	12-9-55	do		Irr
(62)[1]	19dddl	John Sims	Layne-Ark. Co.	212	174	18-12	Qt	58.34	3-30-55	do	870	Irr
63	20bccl	I. L. Sims		210			Qt	60.20	12-9-55	do		Irr
(64)	21bcbl	Joe Skarda		211			Qt	55.43	3-30-55	do	850	Irr
65	21cdcl	do		211			Qt			do		Irr
(66)	21dddl	Wayne Tate		205			Qt	44.49	3-30-55	do		Irr
67	22cbbl	do		207			Qt	46.48	3-30-55	do		Irr
(68)	28abbl	do		208			Qt			do	900	Irr
(69)	29aaal	Dale DeVore		211			Qt	55.37	3-30-55	do	1,200	Irr
70	29bbbl	do	Layne-Ark. Co.	211			Qt	59.33	12-6-55	do		Irr
71[1]	30caal	J. J. Screeton	Lilly Bros.	213	131	18-12	Qt			do		Irr
72[1]	30cbal	Bell Brothers	do	212	128	18-12	Qt	56.58	12-15-55	do		Irr
(73)[1]	31bbbl	J. J. Screeton	do	210	113	18-12	Qt	52.43	3-31-55	do	600	Irr
	T. 4 N., R. 6 W.											
(74)	1cccl	S. R. Nickles		200			Qt	34.45	3-31-55	do	1,100	Irr
75	2cdcl	Earl Koff		211			Qt	40.67	3-31-55	do		Irr
76	3cccl	A. B. Rodgers		211			Qt	56.35	12-6-55	do		Irr
77	7cdal	E. P. Bone		213			Qt	36.15	3-31-55	do		Irr
78[1]	11bddl	Grady Brothers	Lilly Bros.	212	117	18-12	Qt			do		Irr
79	12dbdl	S. R. Nickles		205		18-12	Qt	43.80	3-30-55	do		Irr

[1] See log

(117)[1]	15abal	Paul Eans	Lilly Bros.	205	111	18-12	Qt	37.40	4-27-54	do	1,350	Irr
(118)	23dacl	V. O. Calhoun		195		18-12	Qt	28.70	3-31-55	do	900	Irr
	T. 5 N., R. 6 W.											
119	31aaal	E. A. Stewart	Lilly Bros.	201	110	16-8	Qt	25.38	5-16-55	do	1,800	Irr
	T. 5 N., R. 7 W.											
120	27acel	T. Wrigley		225	85	18-12	Qt	39.29	5-16-55	None		N
121	31bcdl			223	38	5	Qt	27.14	5-16-55	do		Dom

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	T. 3 N., R. 7 W.											
122	4daal	J. T. Humphries		235	18	12	Qt	3.86	6-2-55	None		Dom
123	9becl	T. M. White		243	24	12	Qt	9.39	6-2-55	do		Dom
(124)	14bbcl	M. G. Young	Frank Elder	226		18-8	Qt	51.33	3-29-55	Turbine		Irr
125	15abcl	do		226			Qt	51.59	3-29-55	do		Irr
126	15dbcl	W. T. McCallie		226		18-8	Qt	50.30	3-29-55	do	1,100	Irr
(127)[1]	23beal	Earnest Bennett	Lilly Bros.	226	137	18-12	Qt	57.99	3-29-55	do	950	Irr
(128)	26bbcl	M. G. Young		224	160		Qt			do		Irr
129[1]	26bcbl	do	Lilly Bros.	227	124	18-12	Qt	60	1941	do		Irr
130	27abal	do	Layne-Ark. Co.	227	140	18-12	Qt	59.43	3-29-55	do	1,000	Irr
131	29cddl	D. L. Bennett	Frank Elders	230	157	18-12	Qt	59.85	3-15-55	do	900	Irr
132	29dadl	Kermitt Bennett		230	124	18-12	Qt	62.40	12-8-55	do	900	Irr
133	30baal	D. L. Bennett		232	133	18-12	Qt	57.36	3-29-55	do		Irr
134	30ccbl	Southern Rice Farms	Layne-Ark. Co.	232			Qt	60.90	3-15-55	do		Irr
135	31cddl	do	do	240			Qt	77.07	4-1-55	do		Irr
(136)[1]	32cedl	Stuart & Ward	Lilly Bros.	235	154	18-12	Qt	73.64	3-15-55	do	1,000	Irr
137	32decl	Wayne Stuart		228		18-12	Qt	74.97	12-9-55	do		Irr
138[1]	33cddl	Ben Schaffer	Lilly Bros.	230	153	18-12	Qt	69.66	12-8-55	do		Irr
139[1]	34caol	D. L. Bennett	do	226	124	18-12	Qt	72.00	3-29-55	do		Irr
(140)	35addl	Roy Young		232			Qt			do	885	Irr
141	35cdcl	do		234			Qt	77.85	4-1-55	do		Irr
142[1]	36dacl	Joe Chambers	Lilly Bros.	234	151	18-12	Qt	80.40	3-15-55	None		N
	T. 3 N., R. 8 W.											
143	2dddl	W. H. Beard		255	43	8	Qt	35.69	5-18-55	do		Dom
144	4cccl	Harley King	Foster White	263	140	14-10	Qt	72.38	10-11-55	Turbine		Irr
(145)	5dddl	Emmett Richey	Loyd Brainard	266	135	2	Qt	60	1953	Piston		Dom
146	7bdbl	H. E. Hoggard		257	25	8	Qt	20.58	5-18-55	None		Dom
147[1]	20ddcl	Ralph Colclasure	Lilly Bros.	248	156	18-12	Qt	66.80	12-8-55	Turbine	900	Irr
(148)[1]	21becl	do	do	244	154	18-12	Qt	63.25	2-17-54	do	900	Irr
149	21cdcl	do	Layne-Ark. Co.	246	165	24-12	Qt	67.00	4-1-55	do	1,400	Irr
150[1]	22cccl	Clarence Lilly	Lilly Bros.	236	131	18-12	Qt	56.48	3-15-55	do		N
(151)[1]	23cccl	Clarence & Perry Lilly	do	237	136	18-12	Qt	57.37	3-15-55	do	600	Irr
152	23ddbl	Clarence Lilly	do	235			Qt	57.53	12-8-55	do		Irr
153[1]	26aaal	do	do	234	132	18-12	Qt	56.73	3-15-55	None		N
154[1]	27bdbl	E. E. Verser	do	235	135	18-12	Qt	59.30	12-8-55	Turbine	1,100	Irr
155[1]	27decl	Raymond Schaffer	do	241	149	18-12	Qt	65.30	3-15-55	do		Irr
156	28babl	E. E. Verser	do	246	145	18-12	Qt	66.35	3-15-55	do	1,200	Irr
157[1]	28cbbl	F. H. Schaffer	do	248	153	18-12	Qt	69.40	3-15-55	do		Irr
158[1]	29cdcl	Henry Tomlinson	do	250	144	18-12	Qt	72.30	12-7-55	do		Irr
159	30aadl	Walter Rochelle		257			Qt	70.57	4-1-55	do		Irr
(160)	30addl	Henry Tomlinson		249	160	18-12	Qt	68.98	3-15-55	do	800	Irr
161[1]	30daal	do	Lilly Bros.	249	137	18-12	C	64.63	2-25-55	do		N
(162)[1]	31aadl	do	do	247	159	18-12	Qt			do	1,050	Irr
163	32aabl	Mrs. Henry Tomlinson	do	250	125	18-12	Qt	68.95	2-24-54	do	1,200	Irr
164[1]	32beal	Clarence Lilly	do	245	126	18-12	Qt	56	1943	do		Irr

[1] See log

202	17dad1			265	58	6	Ter?	52.05	5-13-55	None		Dom
(203)	17dda1	Robert Young	Marton Williams	270	140	2	Ter?	50	1950	Piston		Dom
204	17dda2	do		270	54	6	Ter?	50.21	1-28-55	None		N
205	18ccc1	A. Lederman		300	43	6	Ter?	26.70	5-13-55	do		Dom
206	20bbb1			265	52	6	Ter?	13.24	5-18-55	do		Dom
207	22daa1	J. C. Toone	Mr. Stanley	217	50	8	Qt	28.51	5-17-55	do		Dom
208	23bbb1	L. Riegal	Mr. White	230	80	4	Qt	28.90	5-17-55	Jet		Dom
209	24ddc1	J. M. Glover		252	40	8	Qt	31.06	5-17-55	None		Dom
210	28dbd1			255	30	6	Qt	21.52	5-17-55	do		Dom
211	31cdd1			275	18	6	Ter?	20.61	5-18-55	do		Dom
	T. 4 N., R. 9 W.											
212	1ddd1	Marion Williams	Warren Rowell	256	235	3	Ter?	3.78	5-21-55	do		Dom
(213)	5cbb1	R. L. Horn Jr.			120	8	Ter?	18.90	7-20-55	Jet		Dom
214	6daa1	Cooper Estate			24	10	Ter?	11.71	7-20-55	None		Dom
214a[2]	7acc1	City of Cabot		280	1700	8	Atoka			Turbine		PS
214b	7bdd1	do		280	1085	10	Atoka			Turbine	25	PS
215	10cba1			285	14	30	Ter?	0.00	4-15-55	do		N
216	17ddd1			330	25	10	Ter?	15.86	4-28-55	do		N
217	18acc1			292	26	36	Ter?	3.77	4-15-55	do		N
(218)	25baa1	G. W. Cathey	Charley Elan	300	43	6	Ter?	31.13	4-14-55	do		Dom
(219)	25baa2	do	Mr. Huff	300	73	6	Ter?	33.10	8-18-54	Piston		Dom
(220)	28ccd1	E. M. Cherry	Troy Mullens	325	198	6	Ter?	23.52	10-17-55	Turbine	50	Dom
(221)	36daa1	Oak Grove		290	32	30	Ter?	19.58	4-14-55	None		PS
	T. 4 N., R. 10 W.											
(222)	26bdc1	E. L. Daniel	Holland Bros.	250	67	6	Atoka	3.5	1954	Jet		Dom
	T. 5 N., R. 8 W.											
223	30cdd1					6	Qt	9.42	5-13-55	None		Dom
224	32ada1			220	29	6	Qt	12.35	5-13-55	do		Dom
	T. 5 N., R. 9 W.			216	20							
225	36daa1	W. H. Dove		224	29	8	Qt	8.07	5-13-55	do		Dom

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	T. 5 N., R. 6 W.											
226	4aac1	E. B. McConnaughhay	Frank Elder	207	112	20-12	Qt	29.70	3-11-55	Turbine	1,400	Irr
227	4adc1	do	do	206	109	20-12	Qt	28.39	3-11-55	do	2,000	Irr
	T. 5 N., R. 7 W.											
228	5ddd1	S. W. Crook		210	32	6	Qt	19.67	3-10-55	None		S
229	6adc1	Mr. Halmock			24	6	Qt	14.00	3-10-55	do		Dom
230	17acd1	Sid Guyot		208	23	6	Qt	16.82	3-10-55	do		Dom
	T. 5 N., R. 8 W.											
231	2bab1			219	15	6	Qt	4.26	3-11-55	do		Dom
232	8bac1			248	48	6	Ter?	30.74	3-10-55	do		N
233	9dbc1	Harry Cannon		231	32	6	Qt	23.97	3-10-55	do		Dom
234	14daa1	C. Lashlee		215	32	6	Qt	1.83	3-10-55	do		N
235	15cac1	Bill Short		224	32	8	Qt	19.80	3-10-55	do		Dom
(236)	17aba1	Town of Beebe	Layne-Ark. Co.		96	10	Qt			do	1,250	PS
(237)	17aba2	do	do		99	12	Qt			do	1,850	PS
238	18dcc1			221	25	8	Qt	3.04	3-11-55	do		S
(239)[1]	21bab1	Frank C. Mitchell	O. A. Moore	231	80	2	Qt	23.84	4-29-55	Jet		Dom
240	23dcc1	Johnnie Dowing	Foster White	211	78	14-8	Qt	14.98	3-10-55	Turbine	900	Irr
241	24abb1	C. Tyndall		206	33	6	Qt	12.68	3-10-55	None		Dom
242	28abb1			214	26	6	Qt	9.95	3-10-55	do		Dom
	T. 6 N., R. 4 W.											
(243)	18cab1	R. E. Schaffer		195	30	8	Qt	23.74	6-17-55	do		Dom
	T. 6 N., R. 5 W.											

[1] See log [2] Old oil test

(283)	1bbb1	Stanley Merrell				1.5	Qt			Pitcher		
(284)	1caa1	Thomas Brinkley			42	1.5	Qt			do		N
(285)	1cce1	D. Farnsworth				1.5	Qt			do		Dom
(286)	4add1	E. D. Munger	Jack Bartley	205	86	16-12	Qt	15.88	5-24-55	Turbine	1,200	N
(287)	12daa1			195		1.25	Qt	18.44	6-15-55	Pitcher		Dom
288	13dcd1			205		6	Qt	17.96	6-15-55	None		Dom
289	24cbc1			205		1.25	Qt	16.47	6-15-55	None		Dom
(290)	29cab1	G. Williams		215		8	Qt	27.62	6-17-55	do		Dom
	T. 7 N., R. 6 W.											
(291)	15caa1	E. Cranfill		220	26	8	Ter?	15.80	6-16-55	do		Dom
(292)	17adb1	City of Kensett	Layne-Ark. Co.	224	182	8	Ter?	18.90	12-20-55	Turbine	80	PS
(293)[1]	17bda1	do	do	224	217	6	Ter?	26.62	9-28-54	do	210	PS
(294)	18dbc1	O. L. Ballard		225	34	4	Qt	16.70	3-16-55	Centrifugal	50	Irr
295	23cda1			212		8	Qt	26.19	6-17-55	None		Dom
296	33cdd1			220		6	Qt	8.17	5-26-55	do		N
	T. 7 N., R. 7 W.											
(297)	14cab1			242	52	6	Ter?	4.10	3-11-55			S
(298)[2]	21dcc1	Church			11	30	Atoka	4.87	6-21-55	Pitcher		Dom
299	22baa1			285	25	24	Ter?	11.30	5-11-55	None		N
300	23ccc1			235	20	6	Ter?	5.03	3-11-55	do		Dom
301[1]	25cca1	Mo. Pac. R.R.		219	62	8	Qt					N
302	26ada1			220	22	6	Qt	8.83	3-11-55	do		Dom
303	33abb1	Dewey Word		242	24	6	Ter?	3.32	3-11-55	do		Dom
304	35bcc1			225	30	6	Qt	14.59	3-11-55	do		S
305	36bcb1	E. Hopper		212	19	6	Qt	7.77	3-11-55	do		Dom
	T. 8 N., R. 4 W.											
306	19bdd1			210			Qt	15.28	4-21-55	do		N
307	30bcc1	W. O. Wallace		205	42	1.25	Qt	13.22	6-15-55	None		N
	T. 8 N., R. 5 W.											
308	1aba1			218			Qt	18.37	4-21-55	Pitcher		N
(309)	2aaa1	T. J. Childers		217	47	8	Qt	10.68	4-21-55			Dom
310[1]	20bbd1	Mo. Pac. R.R.		220	225	12-6	Atoka					N
311	20ccc1	U. of A. Exp. Sta.		212	46	2	Qt	11.64	4-19-51	Centrifugal		Irr
312	20ccc2	do		212	47	2	Qt	—		do	150	Irr
313	20ccc3	do		212	46	2	Qt	11.70	4-19-51	do		Irr
314	20ccc4	do		212	46	2	Qt	11.68	4-19-51	do		Irr
(315)	20dbb1	H. V. Huntsman		213	103		Qt	17.64	12-20-55	Turbine	1,400	Irr
(316)	28cbb1	A. P. Moodey	Burks	205	60	48-12	Qt	9.15	5-24-55	do	700	Irr
317	28cbb2	do		205	20	1.25	Qt	7.60	5-24-55	None		N
	T. 8 N., R. 6 W.											
318	31ccc1			225	24	8	Ter?	11.27	3-16-55	do		S
319	35aad1			225		6	Ter?	24.10	5-24-55	do		N
	T. 8 N., R. 7 W.											
320	25cca1	R. Whitlow			59	6	Atoka	38.27	3-16-55	do		Dom
321	26abb1	B. Liles			28	8	Atoka	0.75	3-16-55	do		S
(322)	36ccd1	Dewey Manning	Taylor	205	141	6	Atoka	25.44	3-16-55	do		S
	T. 9 N., R. 4 W.											
323	1cdd1	R. Johnson	L. Luther	215	40	1.25	Qt	19.26	6-16-55	do		Dom
(324)	8aca1	U. L. Hickman		232	45	6	Qt	34.86	6-16-55	do		Dom
(325)	8bda1	Town of Bradford		225	80	10-6	Qt?	37	1937	Turbine		PS
326	17ccc1			225		1.25	Qt	16.44	6-16-55	Pitcher		Dom
327	19cab1			225		24	Qt	27.76	4-21-55	None		Dom
328	23bbb1			202		1.25	Qt	9.46	6-16-55	do		Dom
(329)	28aaa1			200		1.25	Qt	7.32	6-16-55	Pitcher		Dom
330	30dbb1			215			Qt	23.20	4-21-55	None		Dom
	T. 9 N., R. 5 W.											
(331)	25dba1	Roy Cole		226			Qt	28.80	4-21-55	do		Dom
332	36acd1			221			Qt	8.79	4-21-55	do		N
333	36dcd1	L. W. Mayfield		218	70	1.25	Qt	20.30	4-21-55	—		Dom

[1] See log

[2] Developed spring

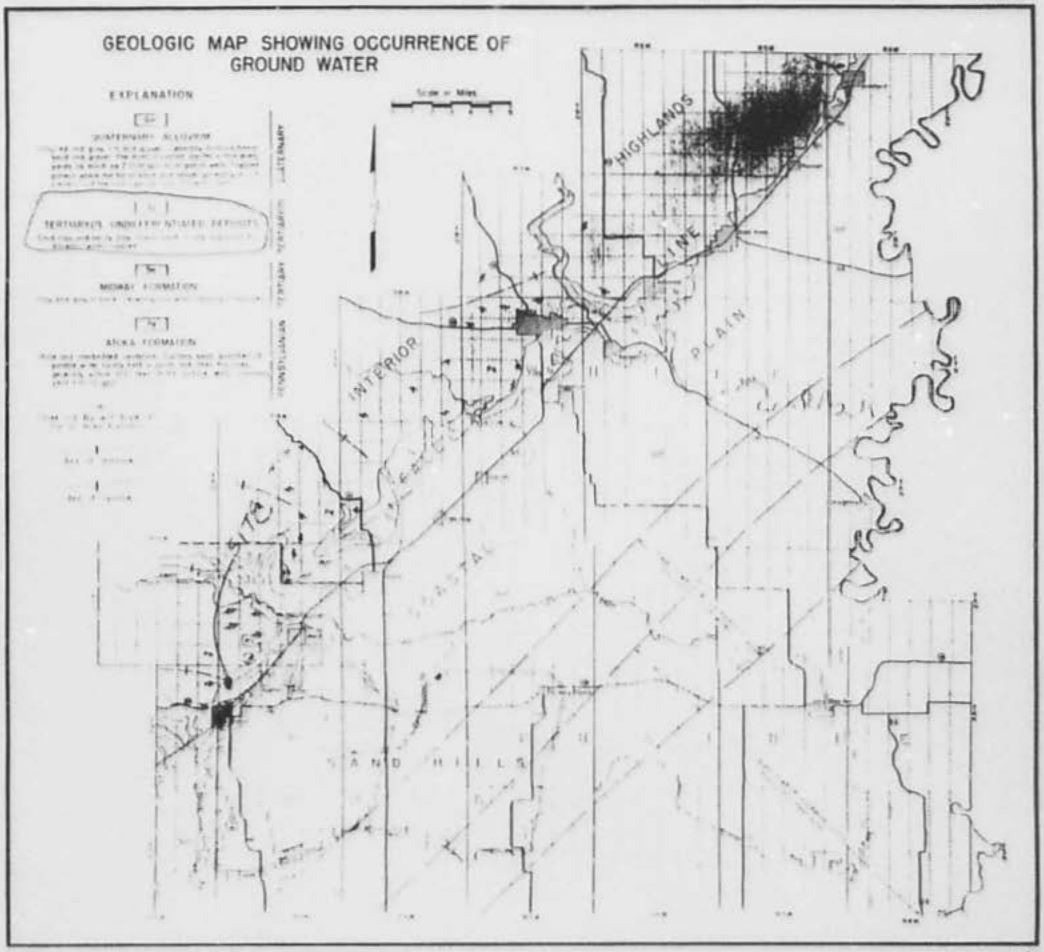
Lonoke County

124	9-1-55	63	2.7	45	7.5	18	0	195	3.0	11	.5	208	143	0	21	328	7.7
127	8-10-54	63.5	2.3	51	9.2	21	0	229	6.8	13	.1	246	165	0	21	398	7.2
128	9-1-55		.62	41	10	16	0	194	2.6	8.5	.7	203	143	0	20	332	7.4
136	8-9-54	64.5	6.5	34	8.6	20	5	146	3.6	23	.1	208	120	0	26	319	8.4
140	9-1-55	65	.51	55	15	25	0	242	24	18	.6	283	198	0	22	451	6.7
145	6-24-55		4.4	12	6.5	12	0	48	1.4	28	0	156	57	17	31	181	6.1
148	8-9-54	64	.33	34	8.5	15	0	150	5.2	18	.4	191	120	0	21	302	7.9
151	8-9-54	63.5	.87	25	7.0	14	3	134	2.8	3.5	1.0	168	91	0	25	232	8.4
160	8-9-54	64	.0	13	3.6	11	0	76	1.4	3.8	1.9	118	47	0	33	147	6.6
162	9-1-55	64.5	4.3	13	4.2	11	0	76	2.2	7.0	.3	116	50	0	32	145	6.6
166	9-1-55	64	1.8	16	4.3	10	0	88	2.6	2.5	1.7	129	58	0	27	167	7.2
171	8-9-54	65	2.5	33	7.1	19	0	174	3.0	6.0	.2	186	112	0	27	299	7.6
175	8-18-54		.87	27	.6	1.8	0	86	1.0	2.2	.5	100	70	0	5	154	8.1
177	4-28-55		2.6	29	16	43	0	281	32	8.5	.6	299	138	0	40	443	7.2
179	8-9-54		.07	9.4	4.5	69	0	165	.4	41	.1	224	42	0	76	392	7.5
181	8-18-54		.12	15	2.9	31	0	58	1.0	48	2.1	195	49	2	57	314	6.7
184	8-9-54	65	1.1	33	8.3	12	0	150	3.2	10	.6	181	116	0	18	273	6.8
186	8-18-54		.08	2.2	1.1	10	0	13	1.6	6.5	11	88	10	0	68	74.4	5.6
189	8-9-54	63	5.6	22	4.6	14	0	99	12	10	.0	158	74	0	29	214	7.6
191	8-6-51	64	4.9				0	46	2	9.5	.3		28	0		112	6.3
191	8-9-54	65	.12	7.3	4.1	11	0	46	2.4	16	.3	101	35	0	38	121	7.4
200	8-10-54	63	.12	37	14	68	0	94	6.0	148	.4	419	150	73	49	658	6.4
201	9-1-55	62	.33	25	7.7	28	2	84	5.2	52	.5	242	94	22	39	319	8.3
203	4-28-55		32	24	16	9.2	0	159	3.2	10	.0	210	126	0	13	325	6.9
213	7-20-55		.74	15	6.0	36	0	8	5.6	54	68	255	62	56	56	346	5.3
214a	5-16-46		1.1	27	11	53	0	218	7.0	30	.5	257	113			429	7.6
218	8-18-54		.05[1]	14	11	31	0	25	9.0	78	12	291	80	60	45	383	5.8
219	8-18-54		32	8.7	6.1	11	0	70	3	11	.1	94	47	0	34	145	7.9
220	10-17-55	62.5	.02	2.6	.6	3.7	0	12	3.4	3.5	1.7	45	9	0	43	33.4	6.4
221	8-18-55		.04[1]	75	54	104	0	15	2.6	450	1.0	1,040	409	396	35	1,530	6.5
222	4-15-55		1.4	17	8.4	7.7	0	110	1.2	2.5	.6	122	77	0	18	185	8.2

White County

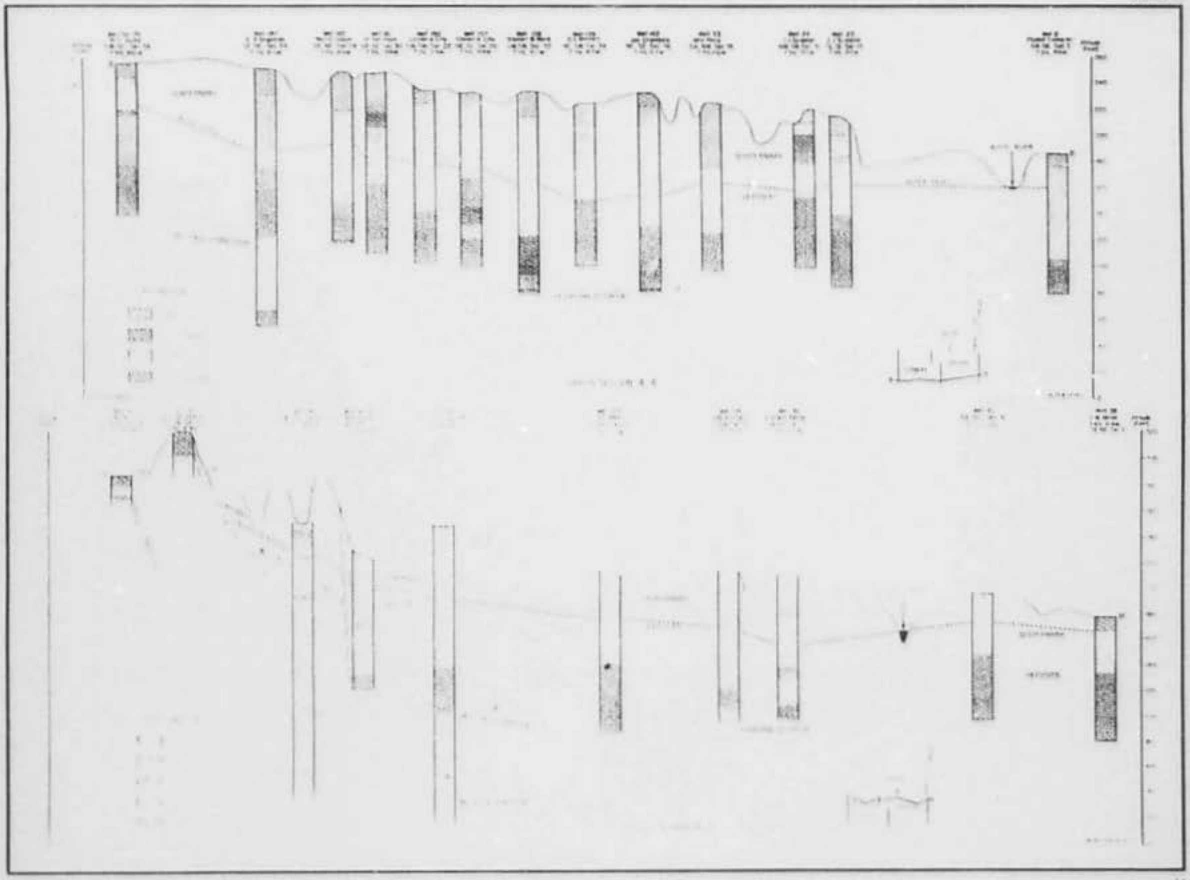
236	10-26-55		0	18	6.4	23	0	24	1.0	57	21	216	71	52	41	293	6.0
237	10-26-55		.21	30	9.2	39	0	34	14	94	24	327	113	85	42	450	6.3
239	9-7-55	66	.12	24	5.2	22	0	144	2.8	4.2	.1	170	81	0	37	251	6.8
243	9-7-55	63	.08	110	36	55	0	461	39	69	27	636	422	44	22	992	7.3
247	8-17-54	64	3.0	16	6.7	11	0	80	3.8	18	.2	146	67	2	26	204	6.5
250	9-17-55	62	7.5	35	8.8	58	0	154	4.0	88	.0	314	124	0	51	518	7.7
251	8-1-55	62	2.1	48	10	32	0	233	3.2	24	.1	290	161	0	30	430	7.3
252	8-17-54	63	1.6	42	10	39	0	243	3.4	22	.0	276	146	0	37	445	7.2
263	9-7-55	63	10	39	13	37	0	52	2.2	134	.0	384	151	108	35	539	6.8
270	8-8-55	62	.22	42	14	54	0	175	3.0	98	.0	368	162	19	42	570	6.7
274	9-7-55	64	.11	8.1	6.5	22	0	8	2.8	48	19	188	47	40	50	226	5.2
277	9-7-55	63	.79	20	6.3	23	0	109	1.6	24	.1	188	76	0	40	254	6.6
280	4-15-55	63	2.5	9.7	7.5	9.6	0	80	5.2	6.2	.6	121	55	0	27	159	6.8
282	7-27-55		14	152	53	105	0	446	1.8	310	1.0	1,010	597	232	28	1,680	6.9
283	7-27-55		18	264	76	901	0	280	.6	1,870	1.0	3,770	971	742	67	6,220	6.9
284	7-27-55		2.7	59	24	343	0	630	12	312	1.5	1,120	246	0	75	1,910	7.8
285	7-27-55	64	.48	118	74	430	0	631	107	618	3.4	1,720	599	82	61	2,960	7.4
286	8-17-54	63.5	5.4	243	72	615	0	245	.4	1,430	1.2	2,870	902	702	60	4,850	6.9
287	9-6-54	63	2.6	108	35	55	0	452	1.4	104	.5	586	414	43	22	972	7.6
290	9-7-5[illegible]	64	6.5	28	12	26	0	124	11	42	.2	245	119	18	32	350	8.2

[1] Iron in solution.


GEOLOGIC MAP SHOWING OCCURRENCE OF
GROUND WATER
EXPLANATION
MIDWAY FORMATION
HIGHLANDS
INTERIOR
LINE
PLAIN
COASTAL
SAND HILLS

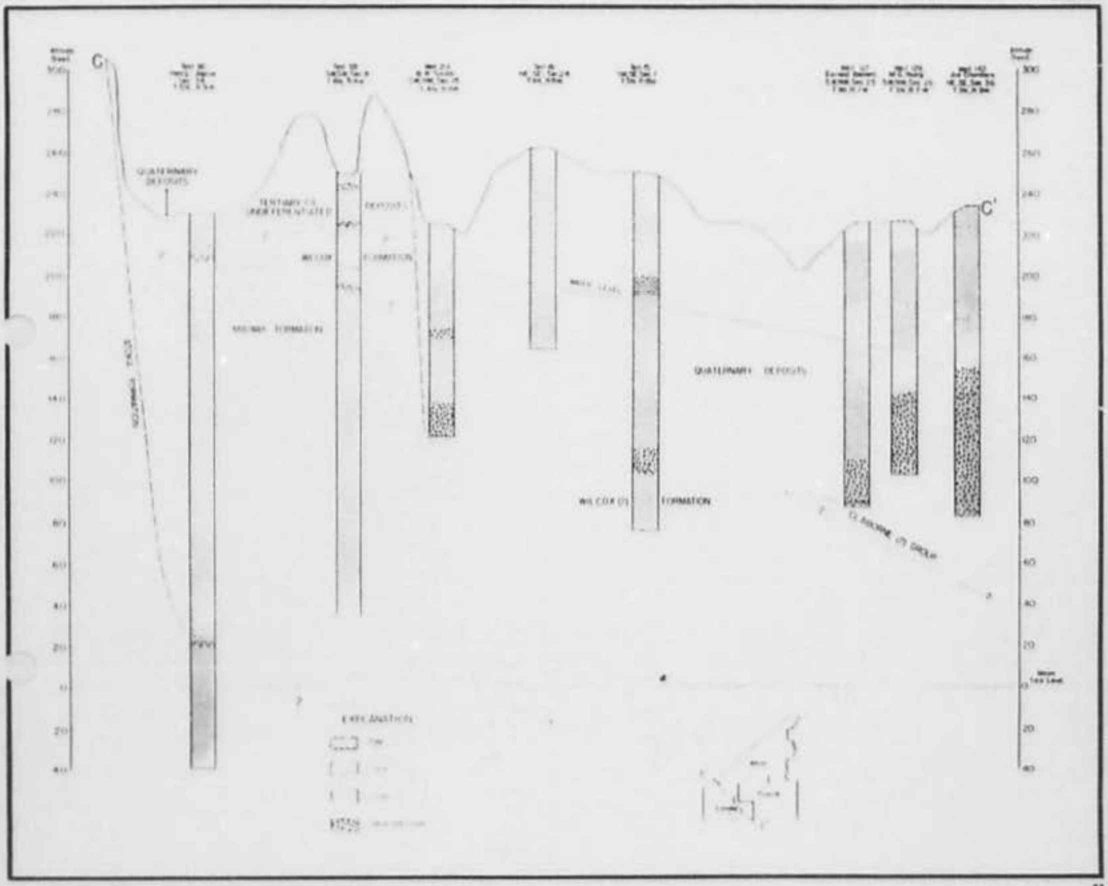
IF THE PAGE FILMED IS NOT AS LEGIBLE AS THIS LABEL, IT IS DUE TO THE QUALITY OF THE ORIGINAL.

PLATE 1



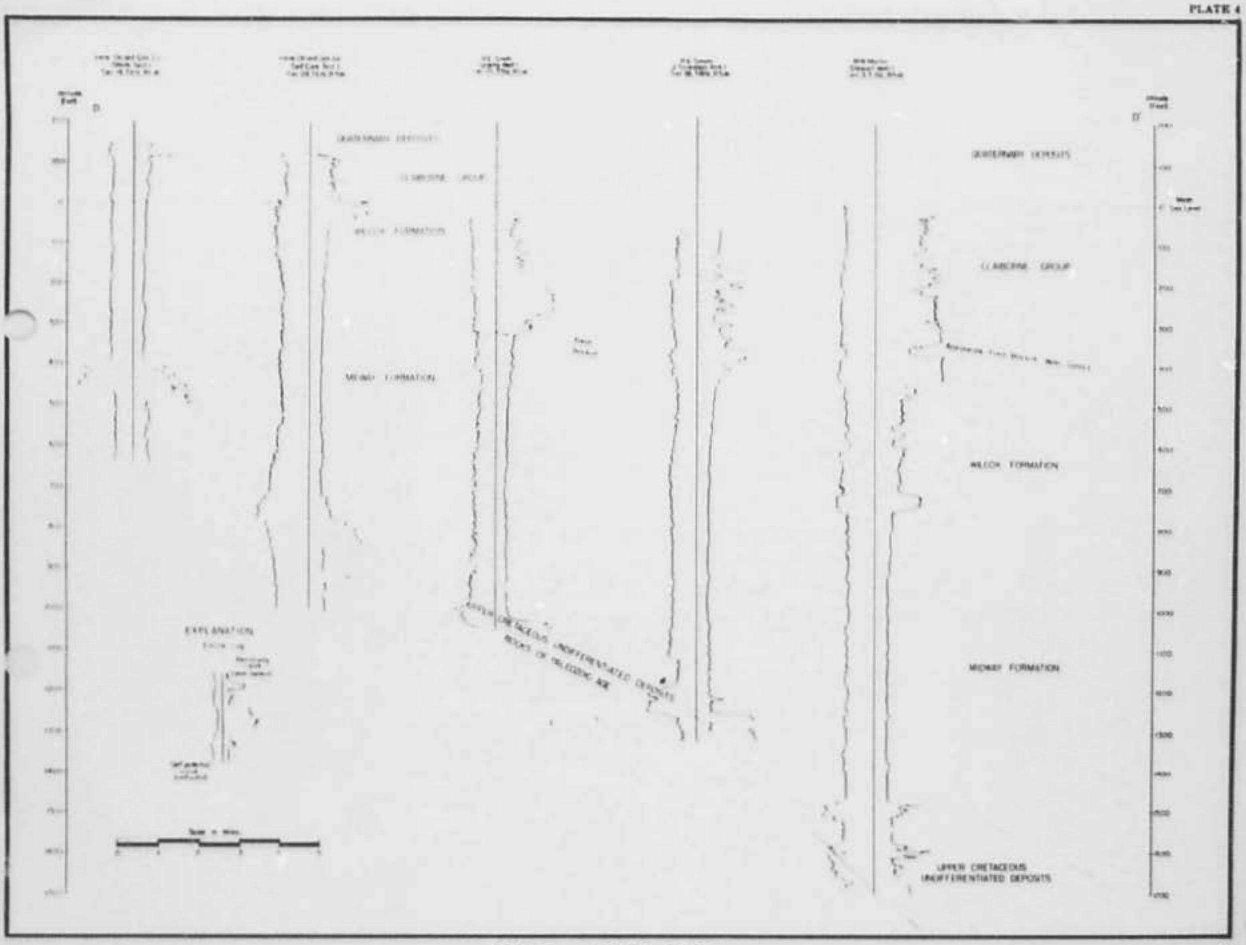
CROSS SECTIONS A-A' AND B-B'

PLATE 3

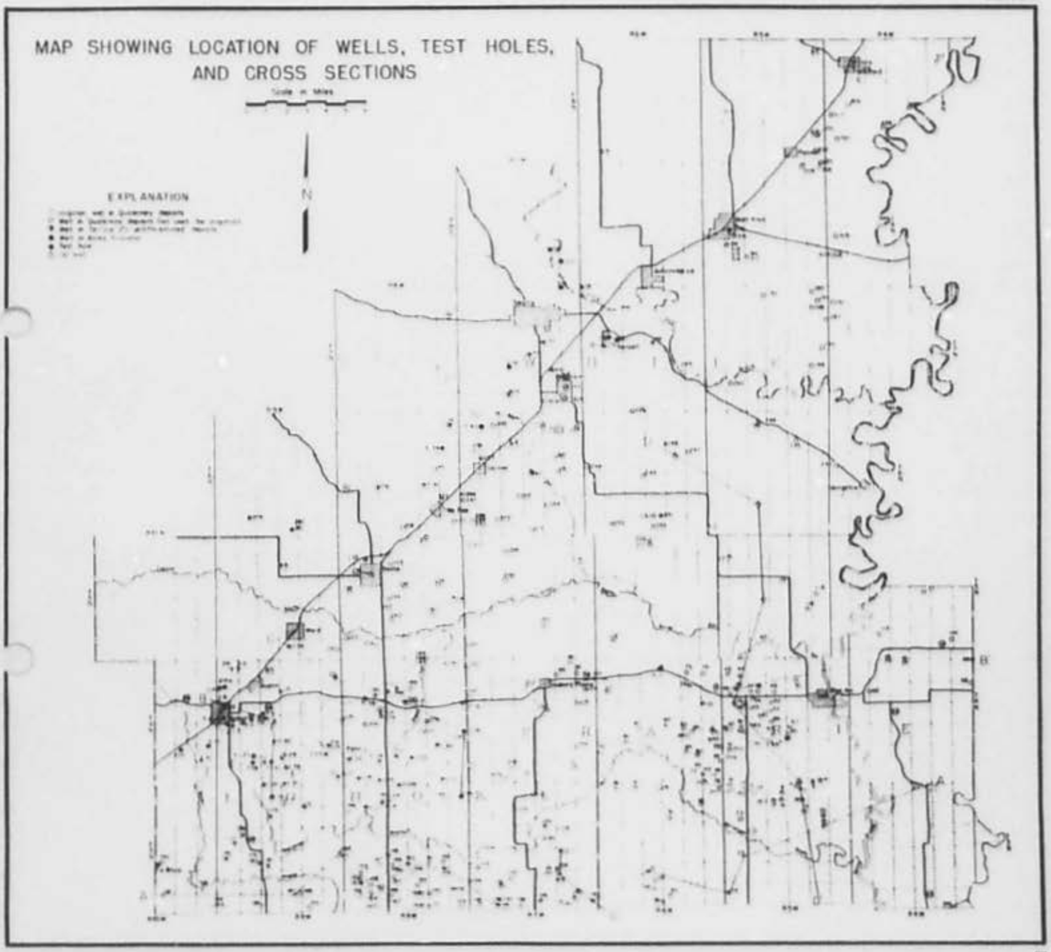


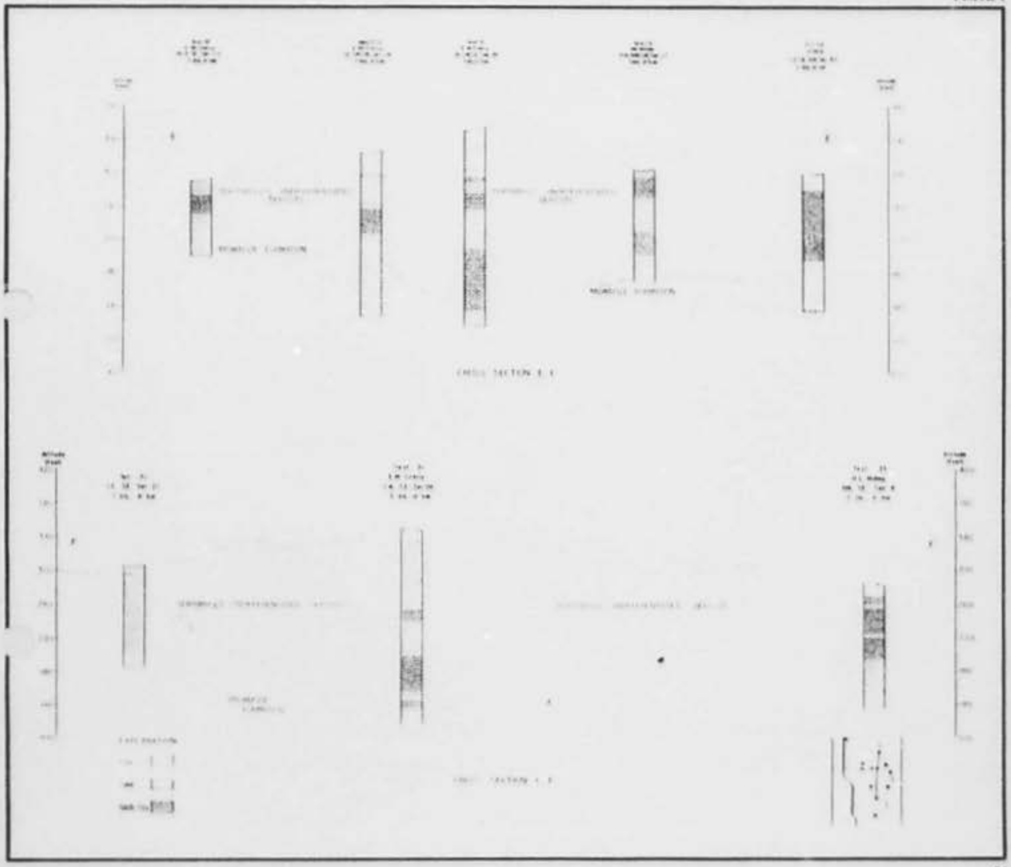
CROSS SECTION C-C'

PLATE 4



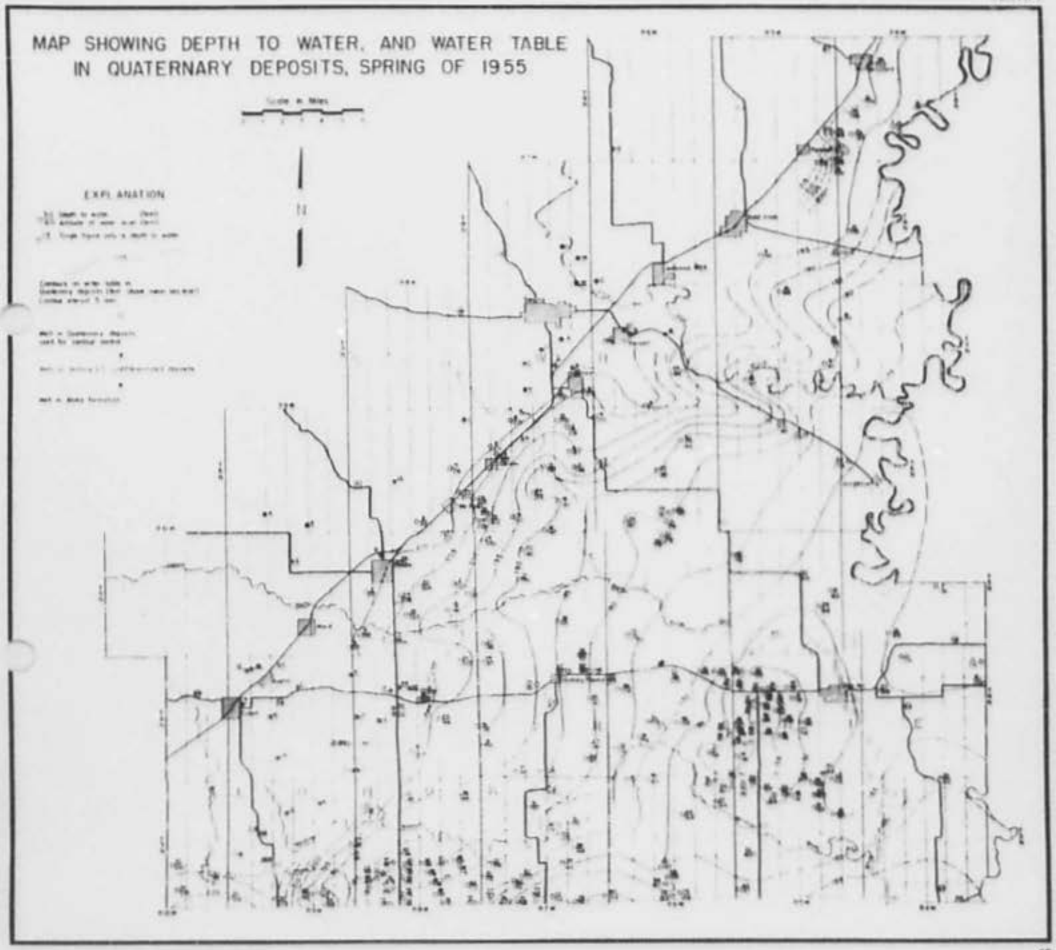
CROSS SECTION D-D'


MAP SHOWING LOCATION OF WELLS, TEST HOLES,
AND CROSS SECTIONS
EXPLANATION
N
A
B



CROSS SECTIONS E-E' AND F-F'

PLATE I


MAP SHOWING DEPTH TO WATER, AND WATER TABLE
IN QUATERNARY DEPOSITS, SPRING OF 1955
EXPLANATION

REFERENCE 10

Ref. 2

Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States

U.S. GEOLOGICAL SURVEY PROFESSIONAL PAPER 1270

Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States

By HANSFORD T. SHACKLETTE *and* JOSEPHINE G. BOERNGEN

U.S. GEOLOGICAL SURVEY PROFESSIONAL PAPER 1270

An account of the concentrations of 50 chemical elements in samples of soils and other regoliths

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1984

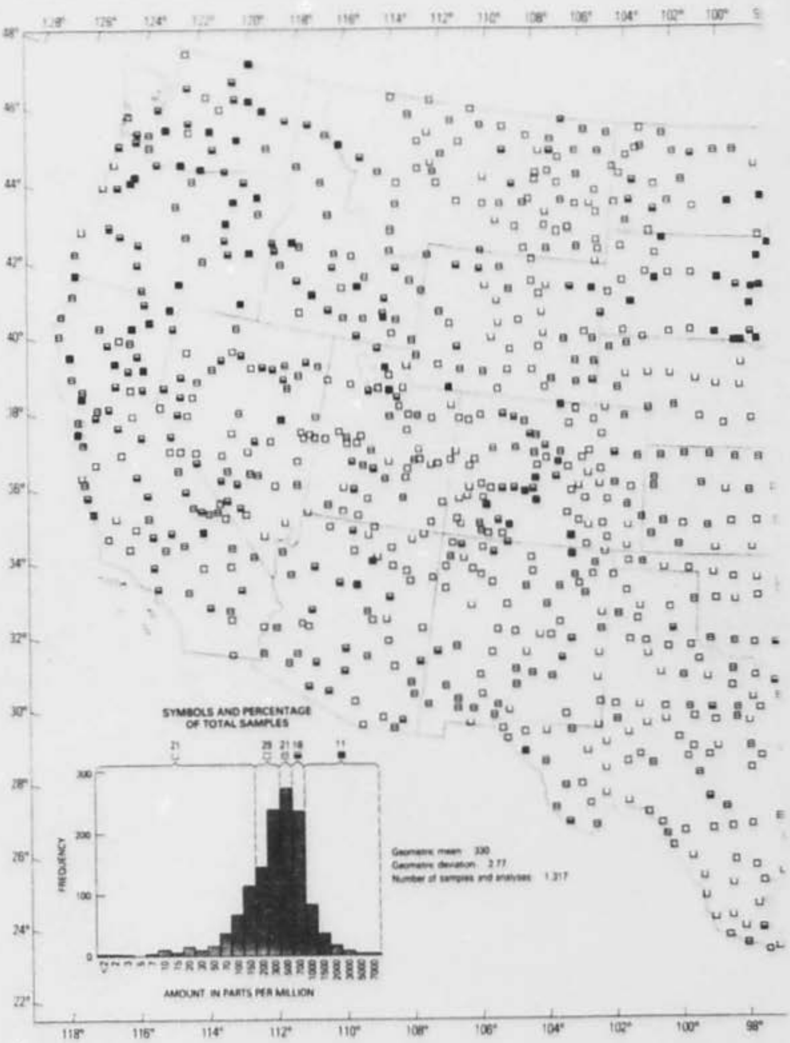


FIGURE 24.—Manganese content of surficial materials.


92°
90°
88°
86°
84°
82°
80°
78°
76°
74°
72°
70°
68°
66°
64°
48°
46°
44°
42°
40°
38°
36°
34°
32°
30°
28°
26°
24°
22°
0
500 MILES
94°
92°
90°
88°
86°
84°
82°
80°
78°
76°
74°

REFERENCE 11

REFERENCE 12

RECORD OF COMMUNICATION	(Record of Item Checked Below) ✓ Phone Call __Discussion __Field Trip __Conference __Other(Specify)	
To: Rodney Cabot Cabot Water Department (501) 843-4654	From: Kurt Soutendijk KS FIT Chemist	Date: 10-15-90 Time: 2:10 p.m.

SUBJECT: Cabot Landfill

SUMMARY OF COMMUNICATION

Cabot has three active city supply wells

1. 34°56'16" N 91°58'29" W
2. 34°56'16" N 91°58'22" W
3. 34°55'48" N 91°58'07" W

The wells range in depth from 100 to 200 feet.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

5 9 3

REFERENCE 13

RECORD OF COMMUNICATION	(Record of Item Checked Below) x Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
To: Andy Dedman City of Cabot (501) 843-2021	**From:** Michael Watson, FIT Ecology & Environment Dallas, TX 75201	**Date:** 06-24-91 **Time:** 13:00/13:21

SUBJECT: Public Usage of Four-Mile Creek

SUMMARY OF COMMUNICATION

Does any private fishing take place from Four-Mile Creek? It goes dry.

Zero yield.

Questioning the validity of the Andy Dedman well sample:

(1) Andy says that the sample was taken from his well by the FIT Team,

and states that he was a witness.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

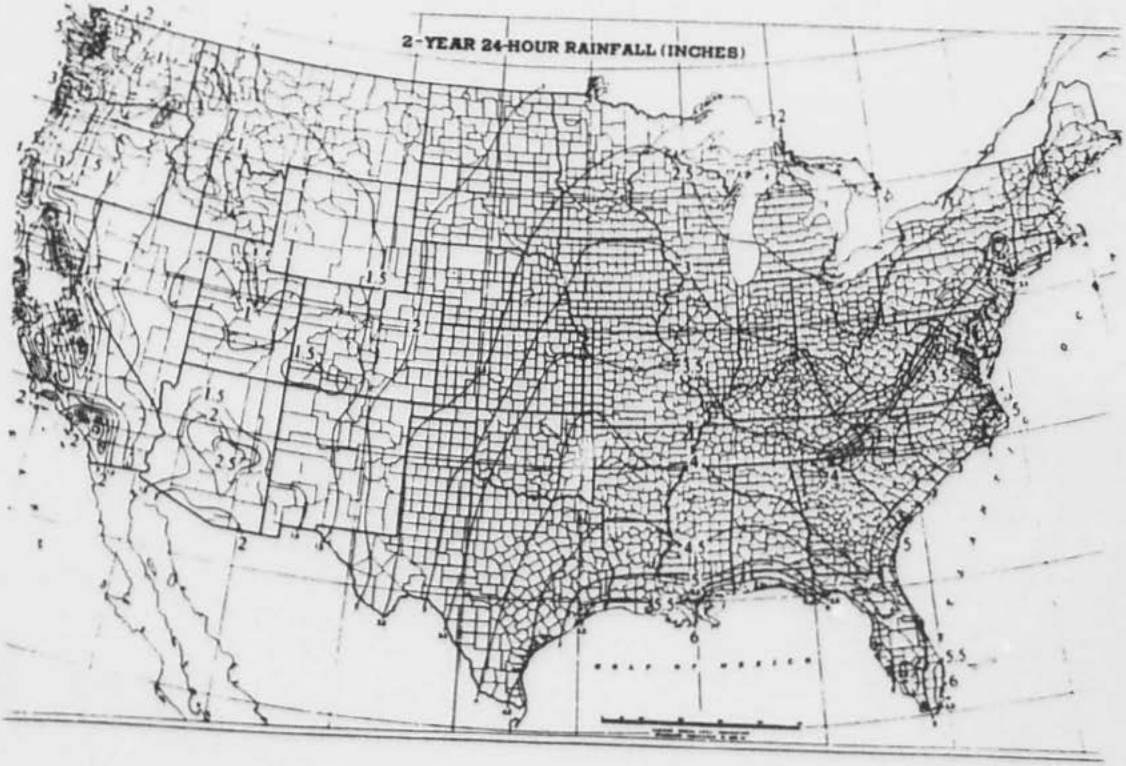
INFORMATION COPIES TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

595

REFERENCE 14

Herschfield, D.M., 1961. Rainfall Frequency Atlas of the United States. U.S. Weather Bureau Technical Paper No. 40.


2-YEAR 24-HOUR RAINFALL (INCHES)

REFERENCE 15

Karen
9/7/90

EPA POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION

REGION	SITE NUMBER
6	ARD 983264275

NOTE: The initial identification of a potential site or incident should not be interpreted as a finding of illegal activity or confirmation that an actual health or environmental threat exists. All identified sites will be assessed under the EPA's Hazardous Waste Site Enforcement and Response System to determine if a hazardous waste problem actually exists.

A. SITE NAME: CABOT LANDFILL	B. STREET (or other identifier): 20 MI FROM JACKSONVILLE

C. CITY: CABOT	D. STATE: AR	E. ZIP CODE: 72023	F. COUNTY NAME: LONOKE

G. OWNER/OPERATOR (if known)
1. NAME: CITY HALL
BOX 1113 / CABOT / AR 72023
2. TELEPHONE NUMBER: 501.843-3566

H. TYPE OF OWNERSHIP (if known)
☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☐ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION

City Landfill

J. HOW IDENTIFIED (i.e., citizen's complaints, OSHA citations, etc.)
RCO GARRET BONDY

K. DATE IDENTIFIED (mo., day, & yr.)
8-29-90

L. SUMMARY OF POTENTIAL OR KNOWN PROBLEM

Believed waste from Vertac
had been disposed at this location

M. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
Bartolomé J. Canellas (6H-MA)	214-655-6740	9-6-90

EPA Form 2070-8 (1-80)

REFERENCE 16

ARD983269275

RECORD OF COMMUNICATION	☒ PHONE CALL ☐ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE ☐ OTHER (SPECIFY) (Record of item checked above)	
TO: FILE	FROM: BART CANELLAS	DATE 10/11/90 TIME 10:30 AM

SUBJECT: OLD CABOT LANDFILL ARD983269275

SUMMARY OF COMMUNICATION

TELEPHONE CALL FROM [redacted]

1- He informed that the City leased the site of the old Cabot landfill for some type of oil exploration operation. He and other citizens are concerned that there may be dioxin on this site. He informed that during the life of the landfill there was mid night dumping from the City of Jacksonville. He have no proof that it is dioxin.

2- He informed that Wilson Tollfree, Deputy Director, Hazardous Waste, ADPC&E has some type of report about this site.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

3- I informed Mr McMellan that the site was currently under investigation by EPA.

Recommended:
Share this information with EPA/FIT

INFORMATION COPIES
TO:

R6-123 (2-84)

REFERENCE 17

FYI

RECORD OF COMMUNICATION

☐ PHONE CALL ☐ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE ☐ OTHER (SPECIFY)

(Record of item checked above)

TO: See Below

FROM: Garret Bandy

DATE: 8-29-90

TIME:

SUBJECT: Phone Call from Wilson Tolefree (ADPCE) Regarding Cabot Ark. Landfill

SUMMARY OF COMMUNICATION

On 8-23-90 Wilson called me to tell me that he received a phone call from David Howell (address below) who told Wilson that he believed that waste from Vertac had been disposed at the "Cabot" landfill, in Cabot, Arkansas (about 20 miles from Jacksonville). He stated that a former operator of the landfill and the ex-mayor of Cabot also believed this and had information. Their addresses are also below. Wilson wanted EPA to look into this. I told Wilson I'd talk to people at EPA about what EPA could do and I'd get back with him.

The purpose of this RoC is to solicit suggestions on what steps to take. I recommend having our civil investigators contacting the people listed below and interview them to see what info they have. Please advise.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

Person who called ADPCE	Ex-Mayor	Ex-operator
DAVID Howell	N. E. Smith	James Spires
406 WEST Pine	415 West Locust St.	424 E. Elm
Cabot, Ark.	501-843-3844	501-843-6017
501-843-6232		
P.O. Box 548 Cabot Ar 72023		

INFORMATION COPIES

TO: DAVIS (6H), Becker (6H-EA), Parr (6H-EC)

R6-123 (2-84)

REFERENCE 18

CERCLIS COUNTY LISTING BY STATE
CERCLIS VERSION 2.0
AR

EPA ID NO.	SITE NAME	SITE LOCATION	CITY	COUNTY
ARD001629639	ALLIED CHEM CORP PINE BLUFF WORKS	1000 FAIRFIELD RD	PINE BLUFF	JEFFERSON
~~ARD980748677~~	~~ALLIED CHEM CORP RIVERSIDE SITE~~	~~1.2 MI NORTH OF ALLIED PLANT~~	~~PINE BLUFF~~	~~JEFFERSON~~
ARD980748669	ALLIED CHEM CORP WHEATFIELD SITE	OFF FAIRFIELD RD	PINE BLUFF	JEFFERSON
~~ARD980884730~~	~~ARK-LA-MISS OIL & SVC (APPOLLO LAKEWOOD)~~	~~HWY 88~~	~~SWAN LAKE~~	~~JEFFERSON~~
ARD980748651	CHALMETT PLANTATION SITE	OFF FAIRFIELD RD	PINE BLUFF	JEFFERSON
~~ARD[illegible]~~	~~HOOVER UNIVERSAL INC.~~	~~END OF N HUTCHINSON RD~~	~~PINE BLUFF~~	~~JEFFERSON~~
ARD980620496	INTERNATIONAL PAPER CO - PINE BLUFF MILL	HWY 81	PINE BLUFF	JEFFERSON
~~ARD[illegible]~~	~~NATIONAL CENTER FOR TOXICOLOGICAL RESEAR~~	~~COUNTY ROAD 3~~	~~JEFFERSON~~	~~JEFFERSON~~
ARD980795967	NORTH BIRCH LANDFILL	NORTH BIRCH	PINE BLUFF	JEFFERSON
~~ARD[illegible]~~	~~PINE BLUFF CITY OF AIRPORT DUMP~~	~~GRIDER FIELD IN PINE BLUFF~~	~~PINE BLUFF~~	~~JEFFERSON~~
ARD000854372	PINE BLUFF CITY OF BOYD POINT OXIDATION	ISLAND HARBOR MARINA ROAD	PINE BLUFF	JEFFERSON
~~ARD[illegible]~~	~~PINE BLUFF CITY OF CANEY BAYOU OXIDATION~~	~~HUTCHINSON STREET~~	~~PINE BLUFF~~	~~JEFFERSON~~
ARD000982967	PINE BLUFF CITY OF PORT POND	EMMETT SANDERS ROAD	PINE BLUFF	JEFFERSON
~~ARD[illegible]~~	~~PINE BLUFF DISPOSAL LANDFILL~~	~~SHANNON RD~~	~~PINE BLUFF~~	~~JEFFERSON~~
ARD983267568	PINE BLUFF GAS & LIGHT CO	UNKNOWN	PINE BLUFF	JEFFERSON
~~ARD[illegible]~~	~~PITTSBURG PLATE & GLASS~~	~~2914 CATALPA ST~~	~~PINE BLUFF~~	~~JEFFERSON~~
ARD089232538	RIVERSIDE CHEMICAL CO/TERRA CORP	1205 E 5TH ST	PINE BLUFF	JEFFERSON
~~ARD[illegible]~~	~~SOUTHERN PACIFIC TRAN CO PINE CAR~~	~~E 2ND AVE COTTON BELT SHOP~~	~~PINE BLUFF~~	~~JEFFERSON~~
ARD098674213	STANT INC	5300 JEFFERSON PARKWAY	PINE BLUFF	JEFFERSON
~~ARD[illegible]~~	~~U. S. EPA COMBUSTION RESEARCH FACILITY~~	~~NAT'L CENTER FOR TOXICOLOGICAL*~~	~~JEFFERSON~~	~~JEFFERSON~~
ARD213820707	US ARMY PINE BLUFF ARSENAL	HWY 256, EAST OF HWY 365	PINE BLUFF	JEFFERSON
~~ARD980743[illegible]~~	~~CAMEROT DISPOSAL SERVICE~~	~~905 SEVIER~~	~~CLARKSVILLE~~	~~JOHNSON~~
ARD980620439	SANITARY LANDFILL/JOHNSON CO. LANDFILL	3 1/2 MI W ON HWY 352	CLARKSVILLE	JOHNSON
~~ARD[illegible]~~	~~FRIT INDUSTRIES~~	~~INDUSTRIAL PARK~~	~~WALNUT RIDGE~~	~~LAWRENCE~~
ARD982305179	WALNUT RIDGE FARMLAND	1 MI E OF H-67 & .5 MI S OF C*	COLLEGE CITY	LAWRENCE
~~ARD[illegible]~~	~~DOUGLAS & LOMASON CO~~	~~OLIVER STREET~~	~~MARIANNA~~	~~LEE~~
ARD980496459	MARIANNA CITY OF LANDFILL	4 1/2 MI SE OF MARIANNA OFF 44	MARIANNA	LEE
~~ARD98049[illegible]~~	~~SEVIER COUNTY SANITARY LANDFILL~~	~~1.5 MI N OF 24 FROM HORATIO AR~~	~~DEQUEEN~~	~~LINCOLN~~
ARD980496624	STAR CITY/LINCOLN COUNTY DUMP	1/2 MI S ON HWY 11	STAR CITY	LINCOLN
~~ARD98049[illegible]~~	~~LITTLE RIVER COUNTY LANDFILL~~	~~AR HWY 108 3 MI E OF ALLENE~~	~~ASHDOWN~~	~~LITTLE RIVER~~
AR7960021[illegible]	US ARMY CORPS OF ENGINEER MILLWOOD RES.	ROUTE 1	ASHDOWN	LITTLE RIVER
~~ARD[illegible]~~	~~BOONEVILLE CITY OF SANITARY LANDFILL~~	~~1 MI SW OF TOWN S OF HWY 23~~	~~BOONEVILLE~~	~~LOGAN~~
ARD983269275	CABOT LANDFILL	1/4 MILE WEST NORTH END WILLI*	CABOT	LONOKE
~~ARD98049[illegible]~~	~~CARLISLE CITY OF DUMP~~	~~SEC 21 T2N R7W HWY 13~~	~~CARLISLE~~	~~LONOKE~~
ARD980496228	ENGLAND CITY OF DUMP	1 MILE SOUTH ON HWY 256	ENGLAND	LONOKE
~~ARD[illegible]~~	~~HELENA CHEMICAL COMPANY~~	~~LITTLE ROCK HWY~~	~~ENGLAND~~	~~LONOKE~~
ARD980496426	LONOKE CITY OF DUMP	HWY 70 2 1/2 MI SW	LONOKE	LONOKE
~~ARD[illegible]~~	~~REMINGTON ARMS CO INC~~	~~I-40 & STATE HWY 15~~	~~LONOKE~~	~~LONOKE~~
ARD980864967	RIVERSIDE CHEMICAL CO	HWY 130 S OF RED	ENGLAND	LONOKE
~~ARD98326757[illegible]~~	~~GAS & ELECTRIC LIGHT CO~~	~~UNKNOWN~~	~~TEXARKANA~~	~~MILLER~~
ARD045943441	[illegible]	BOX 1348	TEXARKANA	MILLER
~~ARD[illegible]~~	~~WESTERN REFUSE INDUSTRIES~~	~~3.6 MI S OF US 71 ON HWY 237~~	~~TEXARKANA~~	~~MILLER~~
ARD[illegible]	AMRICO CHEMICAL CO - BLYTHEVILLE PLANT	HIGHWAY 18 EAST	BLYTHEVILLE	MISSISSIPPI
~~ARD[illegible]~~	~~ARKANSAS BUILDING WIRE PLANT~~	~~HWY 61 SOUTH~~	~~OSCEOLA~~	~~MISSISSIPPI~~
ARD990660417	BLYTHEVILLE CITY OF DUMP	S RUDDLE RD	BLYTHEVILLE	MISSISSIPPI
~~ARD98049[illegible]~~	~~BLYTHEVILLE CITY OF DUMP - NORTH~~	~~1 MI E OF HWY 61 W~~	~~BLYTHEVILLE~~	~~MISSISSIPPI~~
ARD073533671	COLUMBIA RIBBON & CARBON CO INC	HWY 18E.(EAST OF I-55)	BLYTHEVILLE	MISSISSIPPI

REFERENCE 19

Region VI [illegible] REGION 6 RCRA NOTIFIERS LIST

EPA NUMBER	NAME	STREET	CITY	COUNTY	LQG	SQG	INC	LDF	T/S
[illegible]	TROTTER MOTOR CO	3131 OLIVE	PINE BLUFF	ARJEFFERSON		X			
AR0213820707	US ARMY PINE BLUFF ARSENAL	STATE HWY 365	PINE BLUFF	ARJEFFERSON	X		X	X	X
[illegible]	US ARMY RESERVE	1030 W MYRTLE ST	PINE BLUFF	ARJEFFERSON		X			
[illegible]	US EPA INCINERATION RESEARCH FAC	NCTR BUILDING 45	JEFFERSON	ARJEFFERSON			X		X
[illegible]	US FDA NATL CNTR TOX RESEARCH	SEC 17 R10W T4S	JEFFERSON	ARJEFFERSON		X			
[illegible]	VARCO-PRUDEN AMCA INTER'L	222 FLORIDA	PINE BLUFF	ARJEFFERSON	X				
[illegible]	VARCO-PRUDEN BUILDINGS	17TH & COTTONBELT RR	PINE BLUFF	ARJEFFERSON		X			
[illegible]	WAL-MART STORES INC	2901 PINES MALL RD	PINE BLUFF	ARJEFFERSON		X			
[illegible]	WELCH MOTOR CO INC	2505 OLIVE ST	PINE BLUFF	ARJEFFERSON		X			
[illegible]	[illegible] MACHINE PRODUCTS CO	5411 INDUSTRIAL DR S	PINE BLUFF	ARJEFFERSON	X				
[illegible]	[illegible] MOTORS	2400 E HARDING	PINE BLUFF	ARJEFFERSON	X				
[illegible]	[illegible] ELECTRIC COMPANY	1 GORHAM DR	CLARKSVILLE	ARJOHNSON		X			
[illegible]	[illegible] INC	1/4 M S OF HWY 64	CLARKSVILLE	ARJOHNSON	X				
[illegible]	CENTRAL FOUNDRY & STOVE WORKS	101 MCCONNELL ST	CLARKSVILLE	ARJOHNSON		X			
[illegible]	CLARKSVILLE [illegible]	401 CLINE STREET	CLARKSVILLE	ARJOHNSON		X			
[illegible]	[illegible] INC	HWY 64 E	CLARKSVILLE	ARJOHNSON		X			
[illegible]	[illegible] TUBE CORP	MONTGOMERY STREET	CLARKSVILLE	ARJOHNSON		X			
[illegible]	[illegible] PRODUCTS	I-40 EXIT 58	CLARKSVILLE	ARJOHNSON		X			
[illegible]	[illegible] COMPANY	I-40 EXIT 7 1M E	KNOXVILLE	ARJOHNSON		X			
[illegible]	TYSON FOODS INC	200 E CHERRY ST	CLARKSVILLE	ARJOHNSON	X				
[illegible]	UNIV OF THE OZARKS	415 COLLEGE AVE	CLARKSVILLE	ARJOHNSON		X			
[illegible]	[illegible] HARVEY COUCH [illegible]	HWY 52 2M E OF CITY	STAMPS	ARLAFAYETTE		X			
[illegible]	[illegible] PRODUCTS INC	HWY 82 E 1.5M	LEWISVILLE	ARLAFAYETTE		X			
[illegible]	[illegible] FORD	3RD AND ELM	BLACK ROCK	ARLAWRENCE		X			
[illegible]	[illegible] CONSTRUCTION PRODUCTS	WALNUT RIDGE INDUSTRIAL PK	WALNUT RIDGE	ARLAWRENCE		X			
[illegible]	CUSTOM METAL FINISHERS INC	3RD ST IND PK	COLLEGE CITY	ARLAWRENCE		X			
[illegible]	[illegible] PRODUCTS	AIRPORT ROAD	COLLEGE CITY	ARLAWRENCE		X			
[illegible]	[illegible] INDUSTRIES	INDUSTRIAL PK 1M E HWY67N	WALNUT RIDGE	ARLAWRENCE	X			X	X
[illegible]	[illegible] CORPORATION	HWY 67 & SKIL DR	WALNUT RIDGE	ARLAWRENCE		X			
[illegible]	[illegible] MOTOR CO INC	113-117 E MAIN	WALNUT RIDGE	ARLAWRENCE		X			
[illegible]	TEXAS EASTERN GAS STATION 7	HWY 91 12M S	WALNUT RIDGE	ARLAWRENCE	X				
[illegible]	[illegible] & [illegible] CO	OLIVE ST & HWY 79	MARIANNA	ARLEE		X			
[illegible]	US ARMY CORPS ENG [illegible]	HWY 79 6M N	MARIANNA	ARLEE		X			
[illegible]	MISSISSIPPI RIVER TRANSMISSION	HWY 54 1.6M N HWY & 114 INT	GLENDALE	ARLINCOLN	X				
[illegible]	[illegible] FOREMAN CEMENT PLANT	HWY 108 WEST	FOREMAN	ARLITTLE RIV	X				X
[illegible]	[illegible]	301 LOCKE ST	ASHDOWN	ARLITTLE RIV		X			
[illegible]	[illegible] PAPER INC	HWY 71 5M S	ASHDOWN	ARLITTLE RIV		X			
[illegible]	SOUTHERN [illegible] REFRIGERATION TRANS	HWY 71 N 1M	ASHDOWN	ARLITTLE RIV		X			
[illegible]	BOONEVILLE [illegible]	72 W 2ND ST	BOONEVILLE	ARLOGAN		X			
[illegible]	STARK [illegible] INC	31 PENNINGTON DRIVE	PARIS	ARLOGAN	X				
[illegible]	[illegible] INC	HWY 10 EAST	BOONEVILLE	ARLOGAN		X			
[illegible]	US DEPT AGRI [illegible] FAMILY FARM	HWY 23S 6M SW	BOONEVILLE	ARLOGAN		X			
[illegible]	AGRICULTURAL PRODUCTIVITY CO	HWY 165N 2MI N OF CITY	ENGLAND	ARLONOKE		X			
[illegible]	CLEAR LAKE [illegible]	CLEAR LAKE ROAD	ENGLAND	ARLONOKE		X			
[illegible]	[illegible] EQUIPMENT CO	HWY 165 1.5M E ENGLAND	ENGLAND	ARLONOKE		X			
[illegible]	[illegible] USA [illegible]	2101 CENTER ST	LONOKE	ARLONOKE	X				
[illegible]	[illegible] CONSTRUCTION CO	HWY 5 5M W	CABOT	ARLONOKE		X			

Region VI Merge 12/20/91 REGION 6 RCRA NOTIFIERS LIST

EPA NUMBER	NAME	STREET	CITY	COUNTY	LQG	SQG	INC	LOF	T/S
ARD982293081	MISSISSIPPI RIVER TRANSMISSION	HILLMAN RD 2.5M W H-31	CARLISLE	ARLONOKE	X				
ARD047335922	REMINGTON ARMS CO LONOKE PLT	I40 & STATE HWY 15	LONOKE	ARLONOKE	X			X	X
ARD982756834	TEXAS EASTERN GAS REK 137	HWY 89 4M S	CABOT	ARLONOKE	X				
ARD981591167	TURNER JORDAN PONTIAC	HWY 165 N 1.5M ENGLAND	ENGLAND	ARLONOKE		X			
ARD118391175	UNIVERSAL ANTENNA	HWY 367 NORTH	WARD	ARLONOKE	X				
ARD096676143	LABARGE INC ELECTRONIC DIVISION	403 SWAMP STREET	HUNTSVILLE	ARMADISON	X				
ARD983272592	BASS CAT BOATS	HWY 5 JCT HWY 126 1M S	MIDWAY	ARMARION		X			
ARD983266842	LABARGE ELECTRONICS	1 INDUSTRIAL PK RD	FLIPPIN	ARMARION		X			
ARD983274795	TWIN LAKES AUTO BODY	102 MAIN HWY 87 E	MOUNTAIN HO	ARMARION		X			
ARD982244464	WAL-MART STORES INC	100 N 8TH ST	FLIPPIN	ARMARION		X			
ARD983275306	ATLANTIC SOUTHEAST AIRLINES	REG AIRPORT HANGAR 5	TEXARKANA	ARMILLER		X			
ARD055543535	COOPER TIRE & RUBBER	3500 E WASHINGTON	TEXARKANA	ARMILLER		X			
ARD118841224	FASHION CLEANERS	3913 JEFFERSON	TEXARKANA	ARMILLER		X			
ARD003805474	GENERAL ELECTRIC RAILCAR	NORTH OATS & NORTHCUTT STS	TEXARKANA	ARMILLER	X				
ARD055795275	JOHNSON CONTROLS INC	35 GLOBE AVE	TEXARKANA	ARMILLER		X			
ARD064747459	SMITH BLAIR INC	30 GLOBE AVE	TEXARKANA	ARMILLER	X				
ARD023309018	TEXARKANA WIRE & CABLE	3717 OLD POST RD	TEXARKANA	ARMILLER	X				
ARD983272531	TEXAS KENWORTH CO	510 REALTOR DR	TEXARKANA	ARMILLER		X			
ARD980678276	TONKAWA GAS PROC STURGIS GAS	BOYD RD 9M NE	FOUKE	ARMILLER	X				
ARD981907082	WAL-MART STORES INC	133 ARKANSAS BLVD	TEXARKANA	ARMILLER		X			
ARD073521513	ACCO BABCOCK INDUSTRIES	1 ACCO DR	BLYTHEVILLE	ARMISSISSIPP	X				
ARD035445976	ADVANCE INDUSTRIES	1000 N BROADWAY ST	BLYTHEVILLE	ARMISSISSIPP		X			
ARD007023174	AMERICAN GREETINGS	CROMPTON RD & CTY RD 500	OSCEOLA	ARMISSISSIPP	X				
ARD982560633	ARK PWR & LGHT REG WHS	1800 S ELM	BLYTHEVILLE	ARMISSISSIPP		X			
ARD981132840	ARK VO-TECH COTTONBOLL	I-55 & HWY 148	BURDETTE	ARMISSISSIPP		X			
ARD983274216	BAPTIST MEMORIAL HOSPITAL	10TH AND HIGHLAND	BLYTHEVILLE	ARMISSISSIPP		X			
ARD983274475	[illegible]	.6M E HWY 18	BLYTHEVILLE	ARMISSISSIPP	X				
ARD983267436	CARLOCK CHEVROLET	2900 S DIVISION	BLYTHEVILLE	ARMISSISSIPP		X			
ARD139607243	CYRO INDUSTRIES	HWY 61 .5M S	OSCEOLA	ARMISSISSIPP	X				
ARD073532434	ELECTRONIC & MECHANICAL SYSTEM	HWY 18 & 151 IND PK	BLYTHEVILLE	ARMISSISSIPP	X				
ARD073533071	FLEXIBLE TECHNOLOGIES	HWY 18 E BLYTHEVILLE IND PK	BLYTHEVILLE	ARMISSISSIPP	X				
ARD983274359	FRUIT OF THE LOOM INC	1425 CROMPTON RD	OSCEOLA	ARMISSISSIPP		X			
ARD982552721	GLADWIN ARKANSAS	700 S ELM	BLYTHEVILLE	ARMISSISSIPP		X			
ARD981809563	HEEKIN CAN INC	LOCUST & BROADWAY ST	BLYTHEVILLE	ARMISSISSIPP		X			
ARD983272634	HOME OIL CO	HWY 61 ALT .25M E	OSCEOLA	ARMISSISSIPP		X			
ARD982266957	JT PARSONS CABINET CO	PARSONS DR AT CROMPTON RD	OSCEOLA	ARMISSISSIPP		X			
ARD042204370	LITTRELL FORD L/M SALES INC	300 N BROADWAY	BLYTHEVILLE	ARMISSISSIPP		X			
ARD982757999	MAGNETEK UNIVERSAL MFG	HWY 18 E .5M S	BLYTHEVILLE	ARMISSISSIPP		X			
ARD983272626	MAXWELL OIL CO	1 S RAILROAD	OSCEOLA	ARMISSISSIPP		X			
ARD086943346	MILWAUKEE ELECTRIC TOOL CORP	HWY18 E INDUSTRIAL PARK	BLYTHEVILLE	ARMISSISSIPP	X				
ARD007033454	[illegible] INC	701 SOUTH ELM ST	BLYTHEVILLE	ARMISSISSIPP		X			
ARD981908870	NUCOR YAMATO STEEL	HWY 18 & HWY 137	ARMOREL	ARMISSISSIPP	X				
ARD983273517	OSCEOLA FOODS	710 N PEARL	OSCEOLA	ARMISSISSIPP	X				
ARD981512716	PARKER HANNIFIN CORP CIS DIV	HWY 18 BP .25M NW	MANILA	ARMISSISSIPP		X			
ARD055606107	QUALITY CLEANERS	108 E FORD	OSCEOLA	ARMISSISSIPP		X			
ARD990722243	RANDALL TEXTRON	505 JOHN MCHANEY RD	BLYTHEVILLE	ARMISSISSIPP	X				
ARD075647521	REYNOLDS METALS MALVERN CABLE	HWY 51 5M W MALVERN	JONES MILL	ARMISSISSIPP		X			

REFERENCE 20

RECORD OF COMMUNICATION

Reference 20

TYPE:	Phone call	**DATE:**	09/30/92	**TIME:**	10:44 a.m.

TO: Patricia Morris
City of Austin
Austin, Arkansas
(501) 843-7856

FROM: Brenda Nixon Cook, Task Manager
ICF Technology Inc.
(214) 979-3928

BNC

SUBJECT: City of Austin Water Supply

SUMMARY OF COMMUNICATION:

I called Ms. Morris to find out the source, service boundaries and number of connections served by the City of Austin. During the course of our conversation, the following information was learned:

1. Austin purchases water from the City of Ward.

2. Service boundaries:

   East boundary - Highway 321
   North boundary - City of Austin
   South boundary - City of Austin
   West boundary - Oakridge

3. The majority of the residents along Highway 38 are supplied water by the City of Cabot.

4. There are approximately 210 connections.

5. South of Oakridge, there is no water at all; not even domestic wells. Water has been unavailable for over 1 year.

REFERENCE 21

RECORD OF COMMUNICATION

Reference 21

TYPE: Phone call **DATE:** 09/28/92 **TIME:** 1:45 p.m.

TO: Rodney Guthrie
City of Cabot
Cabot, Arkansas
(501) 843-4654

FROM: Brenda Nixon Cook, Task Manager BNC
ICF Technology Inc.
(214) 979-3928

SUBJECT: City of Cabot

SUMMARY OF COMMUNICATION:

I called Mr. Guthrie to find out the source of the City water supply, service boundaries and population served. During the course of our conversation, the following information was learned:

Source of Water

1. The City of Cabot purchases water from the City of Jacksonville and mixes it with water from two municipal wells located 4 miles southeast of Cabot.

Service Boundaries

North boundary - Out to Highway 321
East boundary - Ward service boundaries
South boundary - To Wilcox
West boundary - To Deer Creek

(Currently trying to add Deer Creek to service boundaries.)

2. He is not sure who supplies water to residents west of Cabot and north of Mountain Springs. They are probably using some kind of rural system.

3. There are at least 100 residents in and around Cabot who have domestic wells. Not all residents within the service boundaries opt to hook up to the system.

4. From Cabot City service boundaries to Austin, most people rely on private wells.

5. There are 5,082 accounts in Cabot and 564 in Mountain Springs.

REFERENCE 22

RECORD OF COMMUNICATION

Reference 22

TYPE: Phone call **DATE:** 09/30/92 **TIME:** 10:57 a.m.

TO: Joe Hughes, Technician
U.S. Soil Conservation Service
(501) 676-2176

FROM: Brenda Nixon Cook, Task Manager
BNC
ICF Technology Inc.
(214) 979-3928

SUBJECT: Usage of 4-Mile Creek and Cypress Bayou

SUMMARY OF COMMUNICATION:

1. Cypress Bayou and 4-Mile Creek are used for fishing, swimming and hunting.
2. There is limited irrigation for rice and soybeans near the end of the 15 stream miles.
3. Alligators are present in Cypress Bayou.
4. There are a few wetlands, and generally soils are not hydric and don't meet CFR definition.
5. They are not used as public water supplies.

1 - 6 - 5

REFERENCE 23

RECORD OF COMMUNICATION

Reference 23

TYPE:	Phone call	**DATE:**	09/29/92	**TIME:**	3:30 p.m.

TO: Joyce Feltner
City of Ward
P.O. Box 237
Ward, Arkansas 72176
(501) 843-7686

FROM: Brenda Nixon Cook, Task Manager BNC
ICF Technology Inc.
(214) 979-3928

SUBJECT: City of Ward Water Supply

SUMMARY OF COMMUNICATION:

I called Ms. Feltner concerning the source, service boundaries and population served by the City of Ward service boundaries. During the course of our conversation, the following information was learned:

1. Source: 4 wells

   - One well 10 miles away
   - Two wells out Highway 321
   - One well in Mount Tabor, southeast of Cabot

I asked Joyce if she had section, township, and range of wells. She requested that I send her a letter with all of the information that I need, and she would provide it to me.

REFERENCE 24

RECORD OF COMMUNICATION

Reference 24

TYPE: Phone call **DATE:** 09/29/92 **TIME:** 2:40 p.m.

TO: Sandra Moore
Grand Prairie Water Company
Grand Prairie, Arkansas
(501) 676-2887

FROM: Brenda Nixon Cook, Task Manager BNC
ICF Technology Inc.
(214) 979-3928

SUBJECT: Water Supply of Grand Prairie

SUMMARY OF COMMUNICATION:

I called Ms. Moore to find out the location, depth, population and service boundaries of Grand Prairie Water Company. During the course of our conversation, the following information was learned:

1. They have two wells located approximately 9 miles southeast of Cabot.

2. Their service boundaries are:

   North boundary - White County line
   South boundary - Highway 31 and I-40 south
   East boundary - Prairie County line
   West boundary - City of Austin

3. They serve 815 active connections and have 181 inactive connections.

4. Their service boundaries end at the City of Ward and the City of Austin service boundaries.

5. There are still a lot of private wells; many are used for irrigation of rice and farms, as well as domestic use. Most residents have the option for public water supply, however, not all of the residents want to be on one.

6. They do not sell water to any other municipalities or public water supply companies.

REFERENCE 25

RECORD OF COMMUNICATION

Reference 25

TYPE:	Phone call	**DATE:**	09/29/92	**TIME:**	3:10 p.m.

TO: Shirley Healy
Utility Management Company
(501) 982-0734

FROM: Brenda Nixon Cook, Task Manager
ICF Technology Inc.
(214) 979-3928

SUBJECT: Water Supply of Bayou II and 319 Water Supply Company

SUMMARY OF COMMUNICATION:

I called Ms. Healy to find out the location, population and service boundaries of the Bayou II and 319 Water Supply Company. During the course of our conversation, the following information was learned:

Source of Water

1. Bayou II purchases water from the City of Jacksonville.

2. 319 Water purchases water from the City of Cabot.

Service Boundaries

Bayou II

South boundary - Graham Road and Highway 236
North boundary - Picthorn and Mount Tubor
West boundary - Kerr Station Road
East boundary - San Hill Road and Glover

Highway 319

North boundary - Highway 319
West boundary - Highway 5
East boundary - Highway 67
South boundary - Lewisberg Ridge

(Those residents south of Lewisberg Ridge and north of Highway 321 are most likely on private wells.)

REFERENCE 26

United States
Environmental Protection
Agency

Solid Waste And
Emergency Response
(OS-240)

EPA/540/8-91-020
September 1991
PB92-963220

EPA

National Priorities List Sites:

ARKANSAS

1991

REFERENCE 27

CURRENT WATER RESOURCES ACTIVITIES IN ARKANSAS, 1986-87

Open-File Report 88-338

Table 2.--Flood-prone area maps for Arkansas

[Maps shown with * are 15-minute quadrangles, all others are 7.5 minute]

- Agnos
- *Alicia
- Alma
- Amagon
- Amity
- Arkadelphia
- Ashdown East
- Ashdown West
- Atkins
- *Augusta
- Auvergne

- Barling
- Batesville
- Beebe
- Benton
- Bentonville No.
- Bentonville So.
- Bethesda
- Big Flat
- *Blytheville
- Board Camp
- *Booneville
- Boswell
- Boxley
- Brinkley
- Bryant
- Buckner
- Buffalo City

- Cabot
- Cades
- Caddo Valley
- Calico Rock
- Calion
- Camden
- Camp
- Carthage
- Cecil
- *Clarendon
- Clarksville
- Clinton
- Coal Hill
- Concord
- Congo
- Conway
- Cord
- Cornerstone
- Corning
- Cotton Plant
- Cozahome
- Crocketts Bluff

- Dalton
- Deckerville
- *Dee
- Delaware
- DeQueene
- Des Arc East
- DeValls Bluff
- DeValls Bluff SE
- Domino

- *Edmondson
- *El Dorado

- Fayetteville
- *Felsenthal
- Fletcher Lake
- Fordyce
- Foreman
- Forrest City
- Fort Smith
- Fouke
- Fouke NE
- Fouke SE
- Fountain Lake
- Fourche
- Fourche SW
- Fulton

- *Gainesville
- Georgetown
- Gleason
- *Glenwood
- Goosepond Mtn.
- Gregory
- Gregory SW
- Grubbs
- Guion

- Hardy
- Harrison
- Hartford
- Hartman
- Haskell
- Hasty
- Haynes
- Hindsville
- Holla Bend
- Holly Grove
- Homan
- Hope
- *Horseshoe Lake
- Houston
- *Hunter
- Huntington

- Imboden

- Jacksonport
- Jacksonville
- Jasper
- Jericho
- Judsonia

- Keevil
- Kensett
- Kingsland
- Lake Norrell
- Latour
- Lavaca
- Leslie
- Lewisville
- *Lonoke
- Lonsdale
- Lonsdale NE

- Madison
- Magnolia
- *Malvern
- Mammoth Spring
- Mandeville
- *Manila
- *Marianna
- *Marked Tree
- *Marmaduke
- Marshall
- Martindale
- Maumee
- Mayflower
- McAlmont
- *McGehee
- McRae
- Mena
- Monroe
- Monticello No.
- Monticello So.
- Morrilton East
- Morrilton West
- Moscow
- Mountainburg
- *Mt. Ida
- *Mt. Judea
- Mt. Pleasand
- Mulberry
- Murray

- Nashville
- Newark
- New Blaine
- Newport
- Norfork
- Norfork Dam So.
- No. Little Rock
- Northwest Memphis

- Ogden
- *Osceola
- Ozark

- Paris
- Park Grove
- *Park Place
- *Pastoria
- *Piggott
- Pine Bluff NE
- Pine City
- Ponca
- Portland
- Potter
- Poyen
- Prague
- Prairie Grove
- Prattsville
- Prescott East
- Prescott West
- *Princedale

- Ravenden
- Ravenden Springs
- Ravenden Springs SE
- Reydell
- Rob Roy
- Rusellville East
- Russellville West

- *Salem
- Sheridan
- Sitka
- Smackover
- Smackover NE
- *Snowball
- Snow Hill
- Sonora
- South Fort Smith
- Southwest Memphis
- Springdale
- Spring Lake
- Stuart
- Stuttgart No.
- Stuttgart So.
- Sylamore

- Taylor
- Texarkana
- *Tilton
- Traskwood
- Tuckerman
- Tull
- Turner
- Van Buren

- Waldo
- *Waldron
- *Walnut Ridge
- Warm Springs
- Western Grove
- West Memphis
- Wheeler
- Williford
- Wilmot
- *Wynne

- Yellville

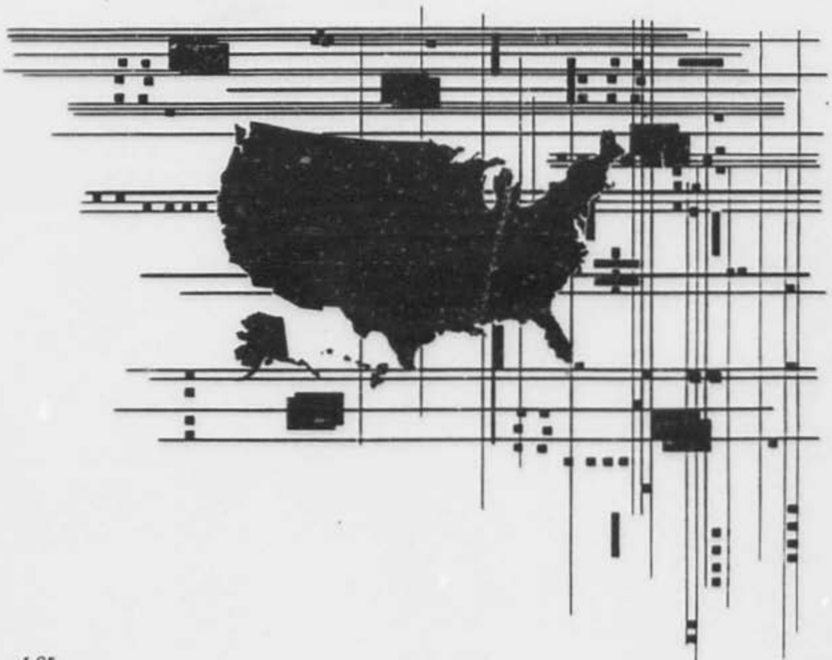
REFERENCE 28

CURRENT POPULATION REPORTS

Special Studies

Series P-23, No. 156

Estimates of Households, for Counties: July 1, 1985



U.S. Department of Commerce
BUREAU OF THE CENSUS

Table 1. Estimates of Households, for Counties: July 1, 1985—Continued

(A dash (-) represents zero or rounds to zero. Estimates are consistent with special censuses since 1980. Corrections to 1980 census counts are not included. See text concerning rounding and average population per household)

State and county	Households				Average population per household		Population			
	July 1, 1985 (estimate)	April 1, 1980 (census)	Change, 1980-85		July 1, 1985 (estimate)	April 1, 1980 (census)	July 1, 1985 (estimate)	April 1, 1980 (census)	Change, 1980-85	
			Number	Percent					Number	Percent
Arkansas—Continued										
Little River	5,000	4,735	300	6.3	2.79	2.92	14,200	13,952	200	1.7
Logan	7,500	7,059	500	6.5	2.67	2.75	20,800	20,144	700	3.4
Lonoke	13,000	11,408	1,600	13.6	2.83	2.96	37,300	34,518	2,800	8.1
Madison	4,400	4,094	300	6.6	2.72	2.76	11,900	11,373	600	4.8
Marion	4,700	4,311	400	8.5	2.63	2.61	12,400	11,334	1,100	9.3
Miller	14,300	13,476	900	6.4	2.67	2.77	38,700	37,766	1,000	2.6
Mississippi	20,600	19,757	900	4.4	2.80	2.96	58,800	59,517	-700	-1.2
Monroe	4,900	4,920	-	-0.7	2.67	2.83	13,100	14,052	-900	-6.5
Montgomery	3,000	2,922	100	3.0	2.61	2.64	7,900	7,771	100	1.6
Nevada	3,900	3,980	-100	-2.0	2.75	2.74	10,900	11,097	-200	-1.5
Newton	2,900	2,718	200	7.9	2.76	2.84	8,100	7,756	400	5.0
Ouachita	12,400	11,198	1,200	10.4	2.66	2.70	33,500	30,541	2,900	9.6
Perry	2,900	2,564	300	12.8	2.69	2.82	7,800	7,266	600	7.6
Phillips	11,400	11,434	-	-0.3	2.93	3.01	33,600	34,772	-1,100	-3.3
Pike	3,900	3,839	100	2.6	2.54	2.67	10,100	10,373	-200	-2.2
Poinsett	9,800	9,465	300	3.2	2.65	2.84	26,000	27,032	-1,000	-3.8
Polk	6,600	6,318	300	5.2	2.57	2.67	17,300	17,007	300	1.5
Pope	15,500	13,615	1,900	13.6	2.66	2.76	42,600	39,021	3,500	9.1
Prairie	3,700	3,658	-	0.1	2.74	2.77	10,000	10,140	-100	-1.1
Pulaski	134,200	124,516	9,700	7.8	2.58	2.68	353,700	340,613	13,100	3.8
Randolph	6,000	6,079	-100	-0.9	2.76	2.75	16,700	16,834	-100	-0.8
St. Francis	10,600	9,930	700	6.8	2.94	3.09	31,400	30,858	500	1.7
Saline	19,500	17,572	2,000	11.2	2.82	2.93	56,700	53,161	3,600	6.7
Scott	3,900	3,534	300	9.8	2.60	2.72	10,200	9,685	500	5.0
Searcy	3,400	3,257	100	4.0	2.60	2.70	8,900	8,847	-	0.2
Sebastian	38,400	35,803	2,600	7.2	2.53	2.62	98,600	95,172	3,400	3.6
Sevier	5,300	5,057	300	5.0	2.67	2.75	14,400	14,060	300	2.1
Sharp	6,100	5,642	500	9.0	2.49	2.58	15,400	14,607	800	5.5
Stone	3,800	3,280	600	17.2	2.54	2.73	9,800	9,022	800	8.9
Union	19,000	18,080	900	5.2	2.56	2.65	49,300	48,573	700	1.5
Van Buren	5,900	5,018	800	16.8	2.53	2.65	14,900	13,357	1,500	11.3
Washington	40,000	36,072	3,900	10.9	2.52	2.63	105,700	100,494	5,200	5.1
White	18,800	17,423	1,400	7.9	2.66	2.76	52,300	50,835	1,500	2.9
Woodruff	4,000	4,014	-	-1.1	2.67	2.78	10,700	11,222	-500	-4.8
Yell	6,600	6,219	400	6.5	2.61	2.70	17,600	17,026	600	3.3
California	9,616,000	8,629,866	987,000	11.4	2.67	2.68	26,358,000	23,667,902	2,690,000	11.4
Alameda	463,100	426,092	37,000	8.7	2.50	2.53	1,194,900	1,105,379	89,500	8.1
Alpine	400	386	100	15.5	2.62	2.84	1,200	1,097	100	7.9
Amador	9,100	7,468	1,600	21.8	2.45	2.49	23,200	19,314	3,900	20.1
Butte	64,700	56,904	7,800	13.7	2.44	2.46	162,400	143,851	18,600	12.9
Calaveras	10,400	8,004	2,400	30.4	2.50	2.54	26,600	20,710	5,900	28.3
Colusa	5,300	4,690	600	12.3	2.74	2.69	14,600	12,791	1,800	14.0
Contra Costa	267,400	241,534	25,900	10.7	2.64	2.69	715,200	656,380	58,800	9.0
Del Norte	7,100	6,791	300	4.4	2.59	2.64	18,700	18,217	400	2.4
El Dorado	39,900	32,505	7,400	22.8	2.59	2.62	103,900	85,812	18,100	21.1
Fresno	198,400	178,506	19,900	11.1	2.85	2.83	576,000	514,621	61,400	11.9
Glenn	8,300	7,707	600	7.7	2.74	2.76	23,000	21,350	1,600	7.6
Humboldt	42,700	41,565	1,100	2.6	2.56	2.58	111,900	108,514	3,400	3.1
Imperial	32,700	28,157	4,500	16.0	3.21	3.24	105,800	92,110	13,700	14.9
Inyo	7,500	7,214	300	4.0	2.40	2.45	18,200	17,895	300	1.8
Kern	162,900	139,811	23,100	16.5	2.88	2.82	479,600	403,089	76,500	19.0
Kings	26,400	23,499	2,900	12.5	3.10	3.04	84,900	73,738	11,200	15.1
Lake	19,700	15,192	4,500	29.9	2.39	2.36	47,700	36,366	11,300	31.2
Lassen	7,900	7,400	500	7.3	2.74	2.70	24,300	21,661	2,700	12.4
Los Angeles	2,920,000	2,730,469	189,500	6.9	2.73	2.69	8,130,800	7,477,503	653,300	8.7

REFERENCE 29

STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

* * * * * * *

Regulation No. 2, As Amended
REGULATION ESTABLISHING WATER QUALITY STANDARDS FOR SURFACE WATERS OF THE STATE OF ARKANSAS

January, 1988

Designated Uses
Delta Ecoregion
(Plates D-1, D-2, D-3, D-4)

Extraordinary Resource Waters
Second Creek (D-4)
Cache River above Cache Bayou - adjacent to natural areas (D-3)
Arkansas River below Dam #2 (D-5)
Strawberry River (D-1)
Two Prairie Bayou adjacent to natural areas (D-3)

Natural and Scenic Waterways
None

Ecologically Sensitive Waterbodies
Lower St. Francis River and lower 10 miles of Straight Slough - location of fat pocketbook mussel (D-2, D-4)
Right Hand Chute at confluence with St. Francis River - location of fat pocketbook mussel (D-2)
Departee Creek - location of flat floater mussel (D-1)
Black River at mouth of Spring River - location of pink mucket mussel (D-1)

Primary Contact Recreation - all streams with watersheds of greater than 10 mi^2 and all lakes/reservoirs

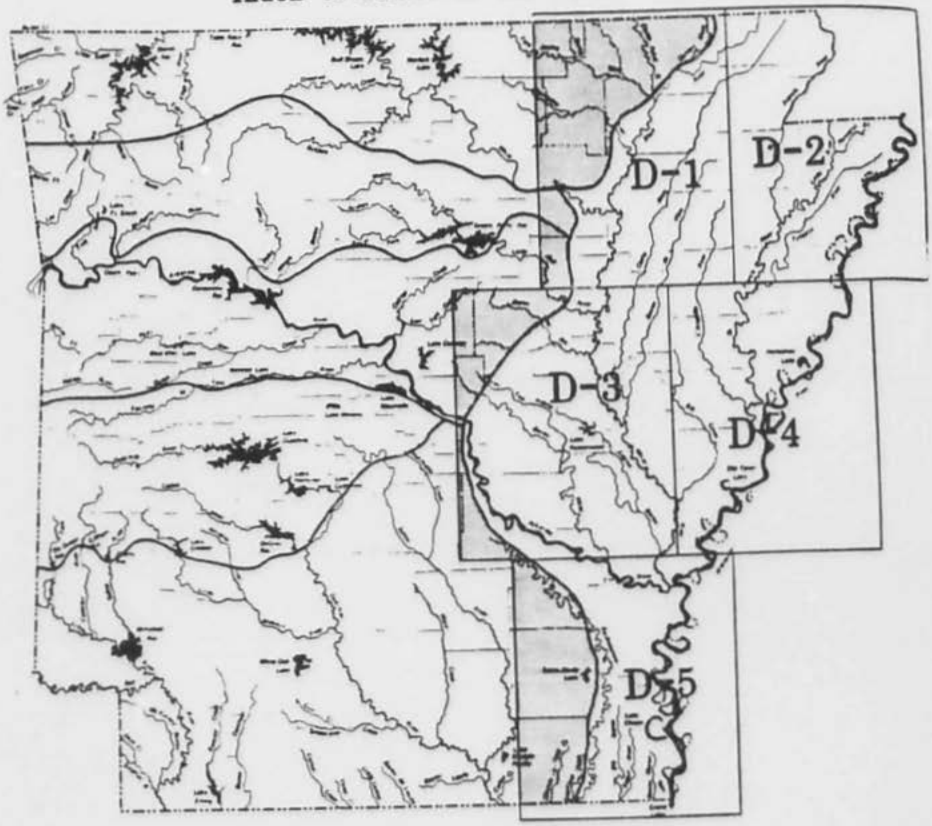
Secondary Contact Recreation - all waters

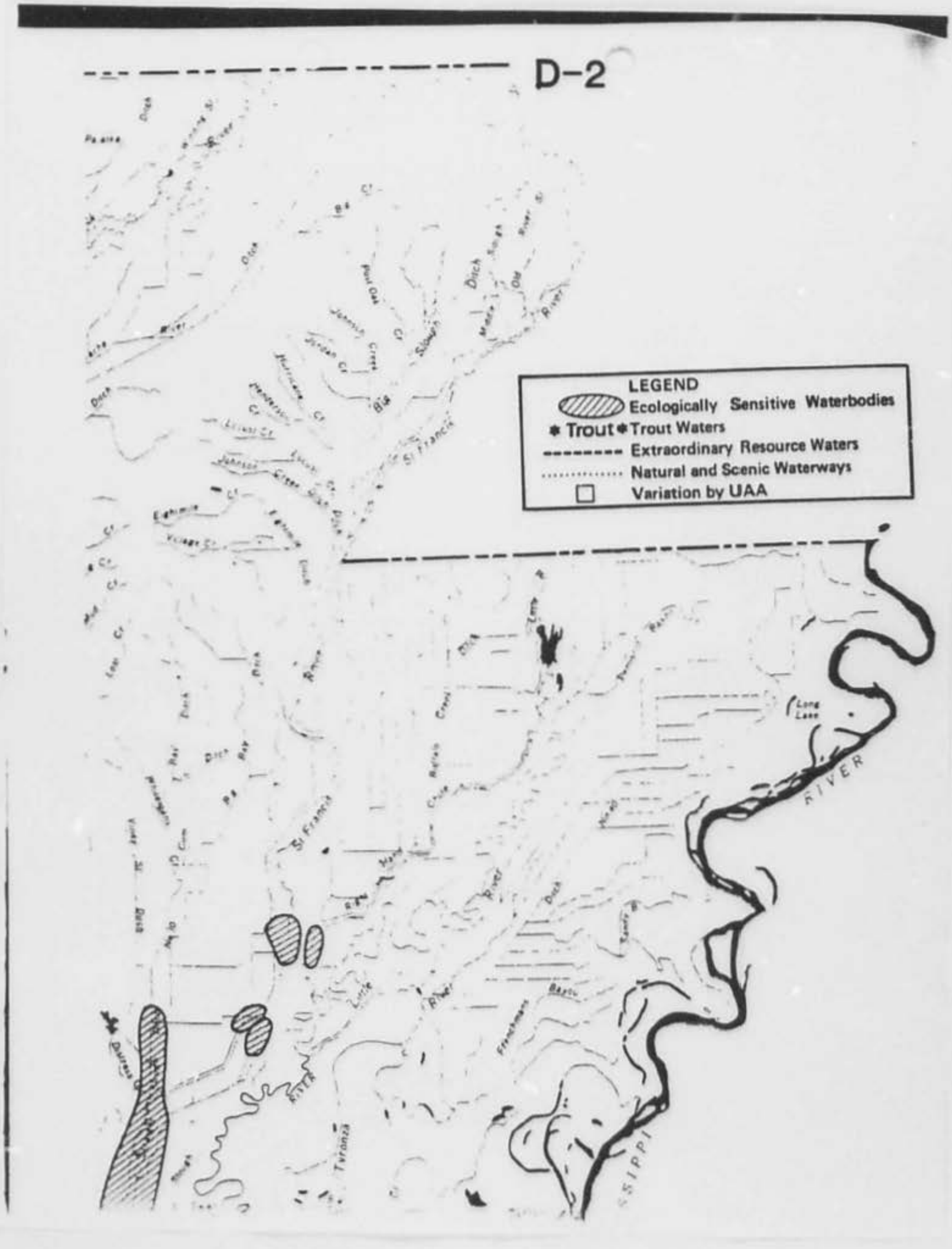
Domestic, Industrial and Agricultural Water Supply - all waters

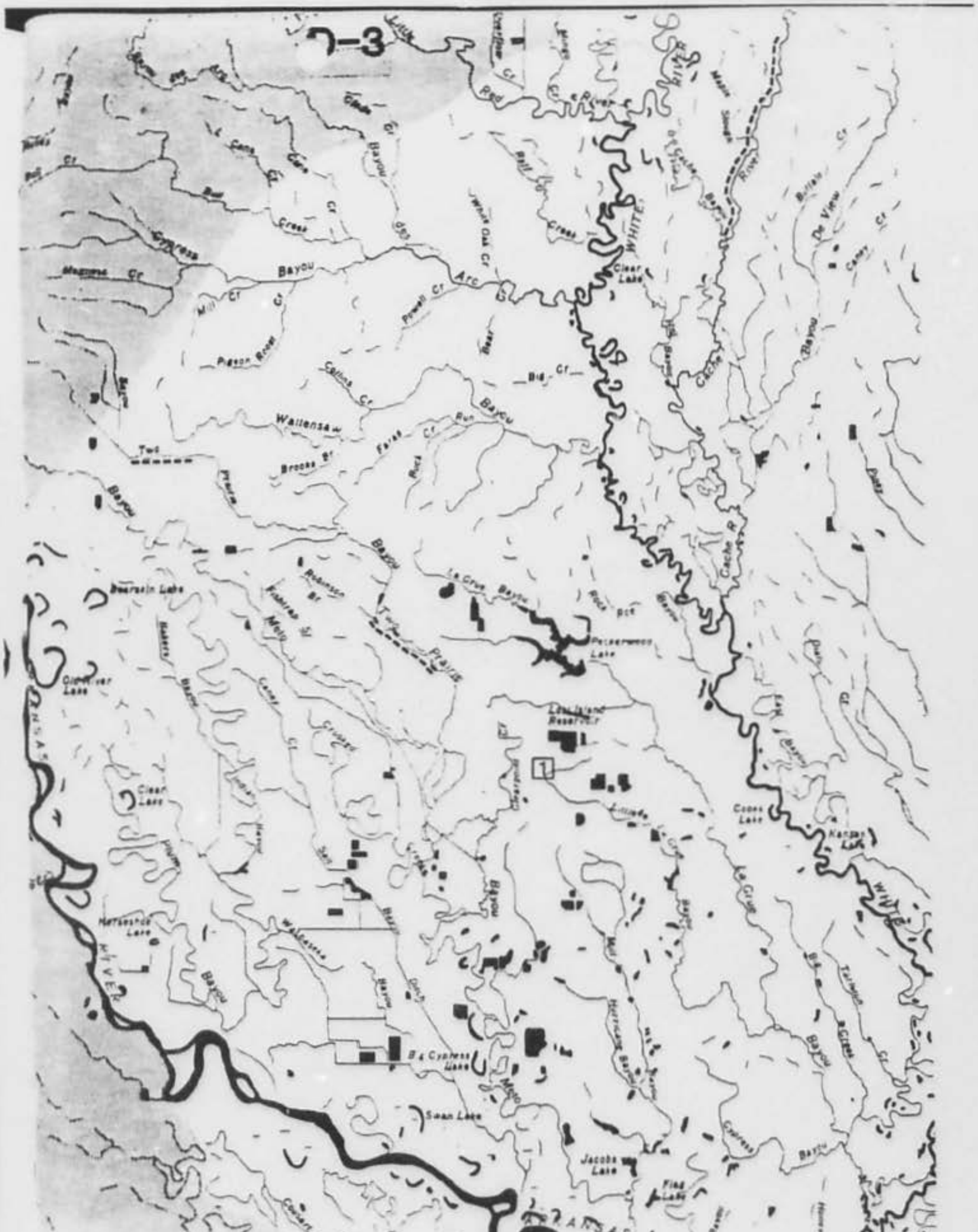
Fisheries
Trout - none
Lakes and Reservoirs - all
Streams
Seasonal Delta fishery - all streams with watersheds of less than 10 mi^2 except as otherwise provided in Section 6(E)
Perennial Delta fishery - all streams with watersheds 10 mi^2 or larger and those waters where discharges equal or exceed 1 CFS

Use Variation Supported by UAA
Unnamed ditch to Little Lagrue Bayou - perennial Delta fishery (D-3, #1)
Little Lake Bayou - seasonal Delta fishery; no primary contact (D-5, #2)

Index to Plates of the Delta




D-2
LEGEND
Ecologically Sensitive Waterbodies
Trout Trout Waters
Extraordinary Resource Waters
Natural and Scenic Waterways
Variation by UAA
St Francis
RIVER


7-3
WHITE
Bayou
Arc
Wallensaw
Cache R
Clear Lake
Swan Lake
Jacobs Lake
ARKANSAS

REFERENCE 30

Water Resources Data Arkansas

Water Year 1989

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT AR-89-1

Prepared in cooperation with the Arkansas Department of Pollution Control and Ecology; Arkansas Game and Fish Commission; Arkansas Geological Commission; Arkansas Soil and Water Conservation Commission; Arkansas State Highway and Transportation Department; Independence County;

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REFERENCE 31

5 C.F.S.

STREAMS IN ARKANSAS

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

AHTD

5 C.F.S.

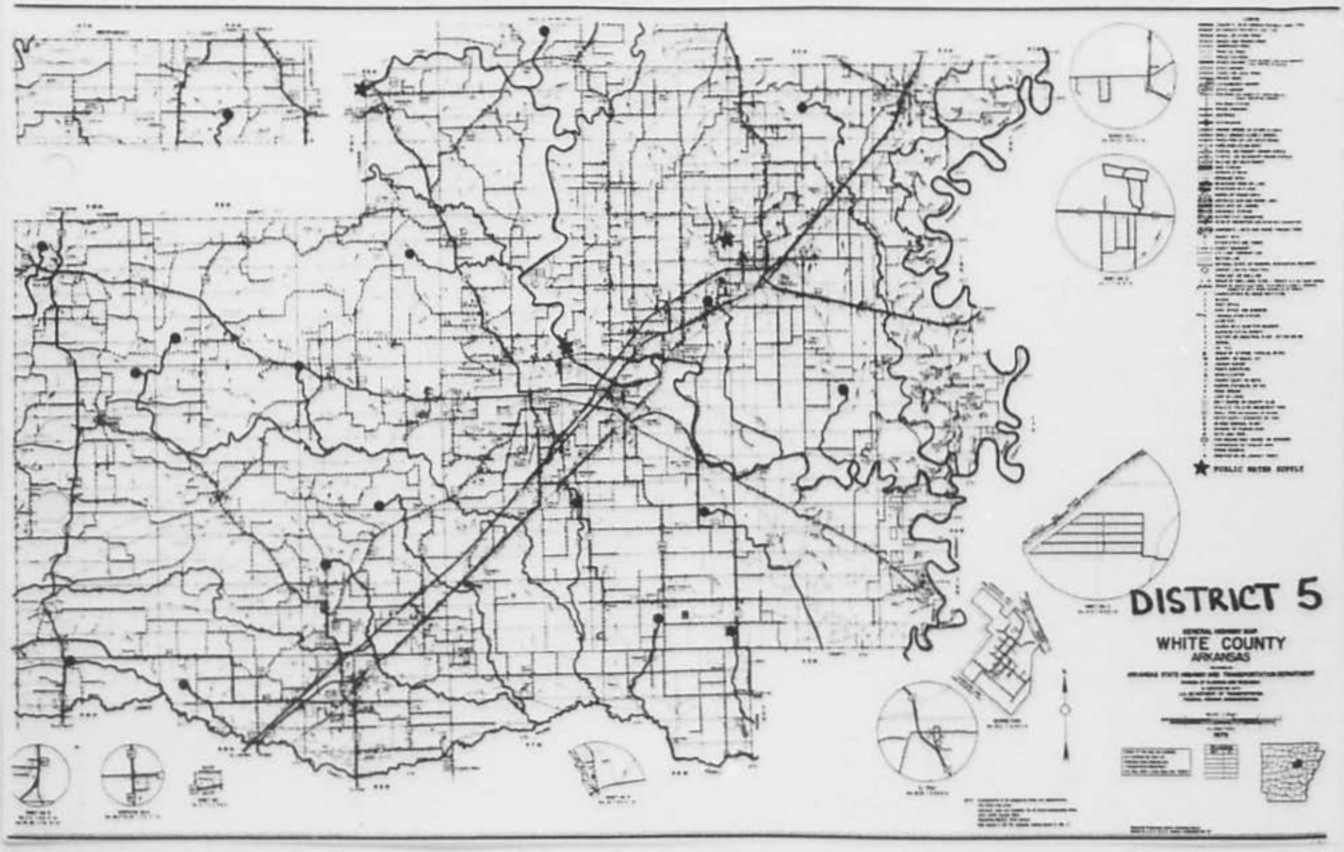
STREAMS IN ARKANSAS

LEGEND

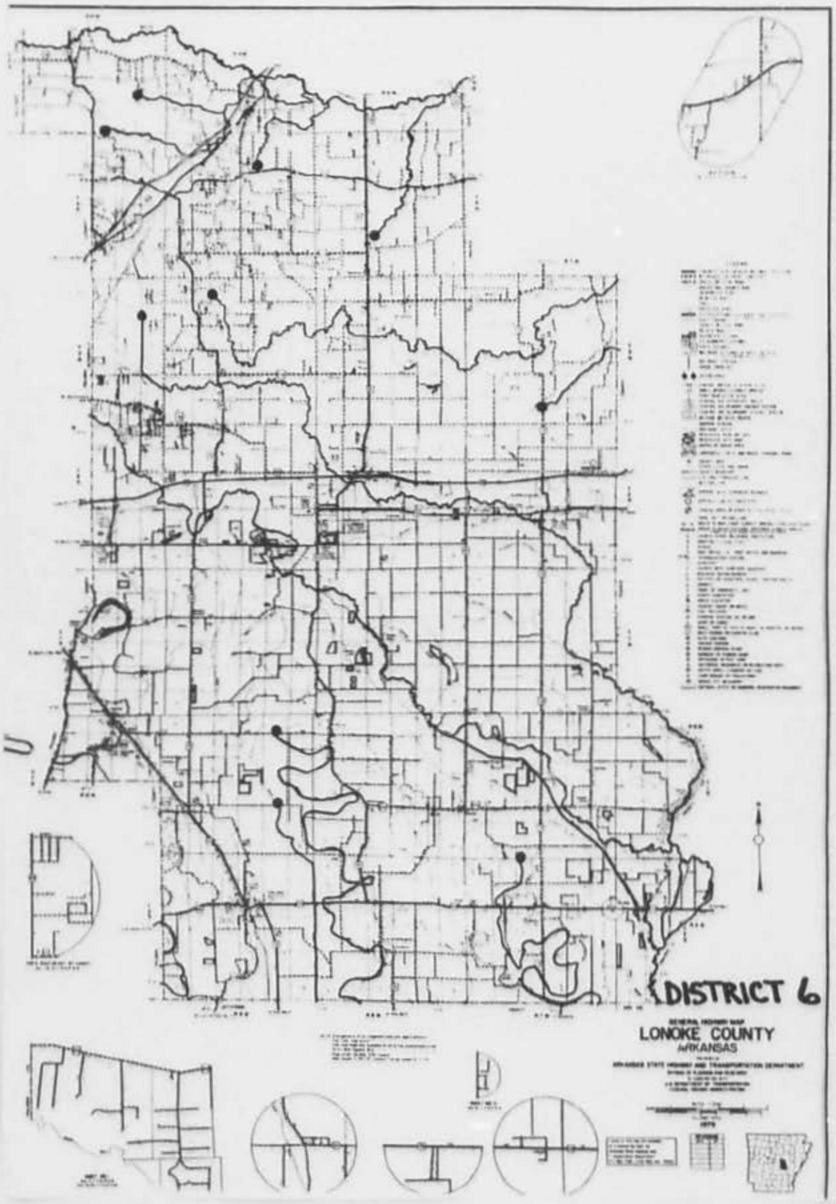
WATERS OF THE UNITED STATES HAVING AN AVERAGE ANNUAL FLOW OF 5 CUBIC FEET PER SECOND OR GREATER.

APPROXIMATE UPSTREAM LIMIT OF 5 CUBIC FEET PER SECOND FLOW (HEADWATERS).

Prepared by
Arkansas State Highway and Transportation Department
Environmental Division


PUBLIC WATER SUPPLY
DISTRICT 5
WHITE COUNTY
ARKANSAS

IF THE PAGE FILMED IS NOT
AS LEGIBLE AS THIS LABEL,
IT IS DUE TO THE QUALITY
OF THE ORIGINAL.



REFERENCE 32

Unite. States Department of th. nterior
FISH AND WILDLIFE SERVICE
JACKSON MALL OFFICE CENTER
300 WOODROW WILSON AVENUE, SUITE ~~XXXX~~ 316
JACKSON, MISSISSIPPI 39213

May 14, 1985

IN REPLY REFER TO:
Log No. 4-3-85-480

Dr. Noel Lewandos
Ecology and Environment Consultants
1509 Main Street, Suite 814
Dallas, TX 75201

Dear Dr. Lewandos:

This responds to your letter of May 7, 1985, requesting endangered species information for the States of Arkansas and Louisiana. Below is a list of federally listed species with distributional information for those States you requested:

(E = Endangered; T = Threatened)

LOUISIANA

Mammals

Florida panther (Felis concolor coryi) - E - entire state
Blue whale (Balaenoptera musculus) - E - coastal waters
Finback whale (Balaenoptera physalus) - E - coastal waters
Humpback whale (Megaptera novaeangliae) - E - coastal waters
Sei whale (Balaenoptera borealis) - E - coastal waters
Sperm whale (Physeter catodon) - E - coastal waters
Red wolf (Canis rufus) - E - Cameron and Calcasieu Parishes

Birds

Bald eagle (Haliaeetus leucocephalus) - E - Assumption, Jefferson, La Fourche, Ouachita, Plaquemines, St. Charles, St. John The Baptist, St. Martin, St. Mary, St. Tammany, Terrebonne, and Union Counties
Eskimo curlew (Numenius borealis) E - entire state
Arctic peregrine falcon (Falco peregrinus tundrius) - E - east, south
Bachman's warbler (Vermivora bachmanii) E - entire state
Ivory-billed woodpecker (Campephilus principalis) - E - entire state
Red-cockaded woodpecker (Picoides (=Dendrocopos) borealis) - E - Allen, Beauregard, Bossier, Claiborne, Evengeline, Grant, La Salle, Morehouse, Natachitoches, Rapids, Tangipahoa, Union, Vernon, and Webster ities

Reptiles

American alligator (Alligator mississippiensis) - T(S/A)* - entire state
Kemp's (Atlantic) ridley turtle (Lepidochelys kempii) - E - coastal waters
Green turtle (Chelonia mydas) T - coastal waters
Hawksbill turtle (Eretmochelys imbricata) - E - coastal waters
Leatherback turtle (Dermochelys coriacea) - E - coastal waters
Loggerhead turtle (Caretta caretta) - T - coastal waters

* For law enforcement purposes the alligators in Louisiana are classified as "Threatened due to Similarity of Appearance". They are biologically neither endangered nor threatened. Regulated harvest is permitted under State law.

ARKANSAS

Mammals

Gray bat (Myotis grisescens) - E - Baxter, Benton, Boone, Carroll, Independence, Izard, Madison, Marion, Newton, Searcy, Sharp, Stone, Van Buren, and Washington Counties
Indiana bat (Myotis sodalis) - E - Izard, Newton, and Stone Counties.
Ozark big-eared bat (Plecotus townsendii ingens) - E - Marion and Washington Counties
Florida panther (Felis concolor coryi) - E - entire state

Birds

Bald eagle (Haliaeetus leucocephalus) - E - Baxter, Benton, Carroll, Desha, Marion, and Mississippi Counties
Arctic peregrine falcon (Falco peregrinus tundrius) - T - east
Bachman's warbler (Vermivora bachmanii) - E - east
Ivory-billed woodpecker (Campephilus principalis) - E - northeast, Arkansas River, and south
Red-cockaded woodpecker (Picoides (=Dendrocopos) borealis) - E - Ashley, Bradley, Calhoun, Clark, Drew, Grant, Lafayette, Perry, Polk, Saline, Scott, Union, and Yell Counties

Reptiles

American alligator (Alligator mississippiensis) - E - south and east

Fishes

Ozark cavefish (Amblyopsis rosae) - T - Benton County
Leopard darter (Percina pantherina) - T - Polk, Howard, and Sevier Counties

Mollusks

Fat pocketbook pearly mussel (Potamilus (=Proptera) capax) - E - White River and St. Francis River
Pink mucket pearly mussel (Lampsilis orbiculata) - E - Black, Spring, Current, and Ouachita Rivers
Curtis' pearly mussel (Epioblasma (=Dysnomia) florentina curtisi) - E - Spring and Black Rivers

For further endangered species coordination on this project, please contact our office, telephone 601/960-4900, FTS 490-4900.

We appreciate your participation in the effort to protect endangered species.

Sincerely yours,

Dennis B. Jordan

Dennis B. Jordan
Field Supervisor
Endangered Species Field Office

REFERENCE 33

MITRE

26 [illegible]

Ms. Lucy Sibold
U.S. Environmental Protection Agency
401 M Street, S.W.
Room 2636, Mail Code WH-548A
Washington, D.C. 20460

Dear Ms. Sibold:

Enclosed is a copy of the draft revised HRS net precipitation values for 3,345 weather stations where data were available. The data are presented by state code, station name, latitude, longitude, and net precipitation in inches. A list of state codes is also enclosed.

The net precipitation values are provided to assist the Phase II Field Testing efforts. It is suggested that the value from the nearest weather station in a similar geographic setting be used as the net precipitation value for a site.

If there are any questions regarding this material, please contact Dave Egan at (703) 883-7866.

Sincerely,

Andrew M. Platt

Andrew M. Platt
Group Leader
Hazardous Waste Systems

AMP:DEE/[illegible]

Enclosures

cc: Scott Parrish

FIELD NAME	FIELD DEFINITION
STATE-NUMBER	Characters 1-2 Cooperative State Code for each State.
STATION-NUMBER	Characters 3-6 Cooperative Station Number Range - 0001-9999.
DATA-CODE	Character 7 Data Indicator Code

STATE CODE LISTING

01	Alabama	28	New Jersey
02	Arizona	29	New Mexico
03	Arkansas	30	New York
04	California	31	North Carolina
05	Colorado	32	North Dakota
06	Connecticut	33	Ohio
07	Delaware	34	Oklahoma
08	Florida	35	Oregon
09	Georgia	36	Pennsylvania
10	Idaho	37	Rhode Island
11	Illinois	38	South Carolina
12	Indiana	39	South Dakota
13	Iowa	40	Tennessee
14	Kansas	41	Texas
15	Kentucky	42	Utah
16	Louisiana	43	Vermont
17	Maine	44	Virginia
18	Maryland	45	Washington
19	Massachusetts	46	West Virginia
20	Michigan	47	Wisconsin
21	Minnesota	48	Wyoming
22	Mississippi	49	Not Used
23	Missouri	50	Alaska
24	Montana	51	Hawaii
25	Nebraska	66	Puerto Rico
26	Nevada	67	Virgin Islands
27	New Hampshire	91	Pacific Islands

Data Indicator Code:

1 = Maximum Mean Temperature
2 = Minimum Mean Temperature
3 = Average (Mean) Temperature
4 = Heating Degree Days
5 = Cooling Degree Days
6 = Precipitation (1951-80 Normals only)

OBS	STATE	NAME		LATNUM	LONNUM	NETPREC
111	02	KINGMAN NO 2		35.12	114.03	1.6903
112	02	WILLIAMS		35.15	112.11	7.3605
113	02	FORT VALLEY		35.16	111.44	9.5211
114	02	LEUPP		35.17	110.58	0.9078
115	02	SELIGMAN		35.19	112.53	2.1134
116	02	TRUXTON CANYON		35.23	113.40	1.7778
117	02	WUPATKI NAT MON		35.31	111.22	0.8235
118	02	WINDOW ROCK		35.41	109.03	3.0179
119	02	GANADO		35.43	109.34	2.9441
120	02	BETATAKIN		36.41	110.32	3.8386
121	02	LEES FERRY		36.52	111.36	0.6941
122	03	CROSSETT 7 S		33.02	91.56	25.3673
123	03	EL DORADO FAA AIRPORT		33.13	92.48	21.8131
124	03	MAGNOLIA 3 N		33.19	93.14	22.0124
125	03	TEXARKANA FAA AIRPORT		33.27	94.00	17.4776
126	03	MONTICELLO 3 SW		33.36	91.49	24.4908
127	03	WARREN		33.36	92.04	24.3038
128	03	CAMDEN 1		33.36	92.49	22.0654
129	03	HOPE 3 NE		33.43	93.33	22.5447
130	03	OKAY		33.46	93.55	20.2713
131	03	PRESCOTT		33.48	93.23	23.7031
132	03	DUMAS		33.53	91.29	23.0191
133	03	NASHVILLE EXP STATION //		34.00	93.56	24.2495
134	03	DE QUEEN		34.02	94.21	22.5659
135	03	ARKADELPHIA 2 N		34.09	93.03	23.7258
136	03	PINE BLUFF		34.11	92.01	23.3561
137	03	SAINT CHARLES		34.23	91.08	24.2312
138	03	MALVERN		34.23	92.49	25.5101
139	03	STUTTGART 9 ESE		34.28	91.25	22.6920
140	03	STUTTGART		34.29	91.32	23.4874
141	03	HOT SPRINGS 1 NNE		34.31	93.03	25.2521
142	03	MOUNT IDA 3 SE		34.32	93.36	26.2710
143	03	BENTON		34.33	92.37	24.6104
144	03	HELENA 5 NW		34.34	90.40	24.6298
145	03	MENA		34.35	94.15	24.1295
146	03	KEO		34.36	92.00	21.8734
147	03	MARIANNA 2 S		34.44	90.46	24.2389
148	03	LITTLE ROCK WSO	//R	34.44	92.14	22.3317
149	03	ALUM FORK		34.48	92.52	23.7426
150	03	NO. LITTLE ROCK WSFO		34.50	92.16	21.0392
151	03	BRINKLEY		34.53	91.12	23.6909
152	03	WALDRON		34.54	94.06	18.0537
153	03	NIMROD DAM		34.57	93.10	20.4557
154	03	DES ARC		34.58	91.30	23.9062
155	03	CONWAY		35.05	92.28	22.2733
156	03	MORRILTON		35.08	92.44	19.6811
157	03	DARDANELLE		35.13	93.09	19.9652
158	03	WYNNE		35.14	90.47	23.0134
159	03	SEARCY		35.15	91.45	23.6858
160	03	SUBIACO		35.18	93.39	17.6134
161	03	RUSSELLVILLE 4 N		35.20	93.09	20.7417
162	03	FORT SMITH WSO	//R	35.20	94.22	15.2076
163	03	OZARK		35.29	93.50	16.9527
164	03	NEWPORT		35.36	91.17	21.5564
165	03	BATESVILLE L AND D 1		35.45	91.38	20.6040

REFERENCE 34

7

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
SANITARY LANDFILL EVALUATION

Name of site 01.	Location (town city) 02.	County 03.	Site No. 04.
ABOT SLF	CABOT	LONOKE	S-77
Operator 05. CABOT	Address 06. City HALL	Entities Served 07. CABOT & SURROUNDING AREA	
Owner 08. CABOT	Address 09. City HALL		

10.

- [ ] 01 Inadequate information sign.
- [ ] 02 Access not limited to operating hours.
- [ ] 03 Inadequate employee facilities.
- [ ] 04 Operator not certified.
- [ ] 05 Inadequate records.
- [ ] 06 Unsatisfactory access roads.
- [ ] 07 Evidence of open burning.
- [ ] 08 Dust or mud not properly controlled.
- [ ] 09 Waste not confined to manageable area.
- [ ] 10 Unsatisfactory litter control.
- [ ] 11 Improper spreading of waste.
- [ ] 12 Improper compacting of waste.
- [ ] 13 Unsatisfactory daily cover.
- [ ] 14 Unsatisfactory intermediate cover.
- [X] 15 Unsatisfactory final cover. Old area needs more cover to close out old operations
- [ ] 16 Improper drainage.
- [ ] 17 Dumping waste into water.
- [X] 18 Leachate observed at the site. Southern Edge at BORDER
- [X] 19 Leachate entering a water course. Possible from leachate drainage
- [X] 20 Improper handling of special waste.
- [ ] 21 Unapproved salvaging of waste.
- [ ] 22 Improper fire protection, emergency communications
- [ ] 23 Evidence of insects and vectors.
- [ ] 24 No provisions for backup equipment.
- [ ] 25 Operation does not correspond with engineering plans.

GENERAL COMMENTS BARRELS OF CHEMICALS FROM FALCON JET CORP L.Rock has been unloaded on landfill. MARKED EL DORADO CHEM. Co. PAINT Paint Thinner & glue. MARKED HAZARDOUS. Some marked 3M

Type of waste disposed:
12. .01 (✓) Residential .02 (✓) Commercial .03 (✓) Industrial .04 (✓) Demolition .05 ( ) Agricultural

Person Interviewed 13.	Month 14.01	Day 14.02	Year 14.03	Time 14.04	Weather conditions 15.
Ed. G. [illegible]	02	18	81		WET
Title 16. OPERATOR	Reinspect prior to (date) 17.				
Inspected by (Signature) 18. W.R. Graham - Stiel - Franklin	Title 19. Pollution Control Inspector				

Solid Waste Control Division

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
SANITARY LANDFILL EVALUATION

Name of site 01.	Location (town, city) 02.	County 03.	Site No. 04.
[illegible]	[illegible]	[illegible]	S77AS(175
Operator 05.	Address 06.	Entities Served 07.	
[illegible]	[illegible]	[illegible]	
Owner 08.	Address 09.		
[illegible]	[illegible]		

10.

- [ ] 01 Inadequate information sign.
- [ ] 02 Access not limited to operating hours.
- [ ] 03 Inadequate employee facilities.
- [ ] 04 Operator not certified.
- [ ] 05 Inadequate records.
- [ ] 06 Unsatisfactory access roads.
- [ ] 07 Evidence of open burning.
- [ ] 08 Dust or mud not properly controlled.
- [ ] 09 Waste not confined to manageable area.
- [ ] 10 Unsatisfactory litter control.
- [ ] 11 Improper spreading of waste.
- [ ] 12 Improper compacting of waste.
- [ ] 13 Unsatisfactory daily cover.
- [ ] 14 Unsatisfactory intermediate cover.
- [ ] 15 Unsatisfactory final cover.
- [ ] 16 Improper drainage.
- [ ] 17 Dumping waste into water.
- [ ] 18 Leachate observed at the site.
- [ ] 19 Leachate entering a water course.
- [ ] 20 Improper handling of special waste.
- [ ] 21 Unapproved salvaging of waste.
- [ ] 22 Improper fire protection, emergency communications
- [ ] 23 Evidence of insects and vectors.
- [ ] 24 No provisions for backup equipment.
- [ ] 25 Operation does not correspond with engineering plans.

GENERAL COMMENTS Overall operation looks good

Type of waste disposed:

12. .01 ( ) Residential .02 ( ) Commercial .03 ( ) Industrial .04 ( ) Demolition .05 ( ) Agricultural

Person Interviewed 13.	Month 14.01	Day 14.02	Year 14.03	Time 14.04	Weather conditions 15.
Ed Phillips	05	12	81	930	Dry
Title 16.	Reinspect prior to (date) 17.				
Operator					
Inspected by (Signature) 18.	Title 19.				
Suzanne Stover	Pollution Control Inspector				

Solid Waste Control Division
Form No. 2.2 12/01/78

2

4 5 6

JOm

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

SANITARY LANDFILL EVALUATION

Name of site 01.	Location (town, city) 02.	County 03.	Site No. 04.
Cabot SLF	Cabot	Lonoke	S-0178
Operator 05. Cabot	Address 06. City Hall Cabot AR	Entities Served 07. Cabot & surrounding areas	
Owner 08. Cabot	Address 09. City Hall Cabot AR		

10.

- [ ] 01 Inadequate information sign.
- [ ] 02 Access not limited to operating hours.
- [ ] 03 Inadequate employee facilities.
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- [ ] 19 Leachate entering a water course.
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- [ ] 21 Unapproved salvaging of waste.
- [ ] 22 Improper fire protection, emergency communications
- [ ] 23 Evidence of insects and vectors.
- [ ] 24 No provisions for backup equipment.
- [ ] 25 Operation does not correspond with engineering plans.

GENERAL COMMENTS Overall operation looks good - Landfill listed on inactive permit list but is still active and has also expanded landfill site

Type of waste disposed:

12. .01 (✓) Residential .02 (✓) Commercial .03 (✓) Industrial .04 (✓) Demolition .05 ( ) Agricultural

Person Interviewed 13.	Month 14.01	Day 14.02	Year 14.03	Time 14.04	Weather conditions 15.
Ed Phillips	11	02	81	10:00	Cloudy & wet
Title 16. Operator	Reinspect prior to (date) 17.				
Inspected by (Signature) 18. Suzanne Stein	Title 19. Pollution Control Inspector				

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Solid Waste Control Division
Form No. 2.0 12/01/78

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
SANITARY LANDFILL EVALUATION

Name of site 01.	Location (town, city) 02.	County 03. / Site No. 04.
[illegible] SLF	Cabot	Lonoke — 5-77
Operator 05.	Address 06.	Entities Served 07.
[illegible]	Cabot	Cabot
Owner 08.	Address 09.	
Cabot	City Hall	

10.

- [ ] 01 Inadequate information sign.
- [ ] 02 Access not limited to operating hours.
- [ ] 03 Inadequate employee facilities.
- [ ] 04 Operator not certified.
- [ ] 05 Inadequate records.
- [ ] 06 Unsatisfactory access roads.
- [ ] 07 Evidence of open burning.
- [ ] 08 Dust or mud not properly controlled.
- [ ] 09 Waste not confined to manageable area.
- [ ] 10 Unsatisfactory litter control.
- [ ] 11 Improper spreading of waste.
- [ ] 12 Improper compacting of waste.
- [ ] 13 Unsatisfactory daily cover.
- [ ] .14 Unsatisfactory intermediate cover.
- [ ] .15 Unsatisfactory final cover.
- [ ] .16 Improper drainage.
- [ ] .17 Dumping waste into water.
- [x] .18 Leachate observed at the site. in road ditch southern border of site
- [x] .19 Leachate entering a water course. possibly to [illegible] Creek
- [ ] .20 Improper handling of special waste.
- [ ] 21 Unapproved salvaging of waste.
- [ ] 22 Improper fire protection, emergency communications
- [ ] .23 Evidence of insects and vectors.
- [ ] 24 No provisions for backup equipment.
- [x] .25 Operation does not correspond with engineering plans. Look under comments

GENERAL COMMENTS Looking at the plans, it seems that the operation has progressed past the boundary of the area under permit. Operation is satisfactory otherwise.
The leachate problem on south side of landfill must be corrected

Type of waste disposed:
12. .01 (x) Residential .02 (x) Commercial .03 (x) Industrial .04 (x) Demolition .05 ( ) Agricultural

Person Interviewed 13.	Month 14.01	Day 14.02	Year 14.03	Time 14.04	Weather conditions 15.
[illegible] Spicer Contractor	6	24	80	1:15	clear

Title 16.	Reinspect prior to (date) 17.
Inspected by (Signature) 18.	Title 19.
[signature]	Pollution Control Inspector

Solid Waste Control Division
Form No. 2.0 12/01/78

4

CSN: 430059
Permit = S-178

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
SANITARY LANDFILL EVALUATION

Name of site 01	Location (town, city) 02.	County 03. / Site No. 04.
Cabot S.L.F.	Cabot	Lonoke / SW78
Operator 05.	Address 06.	Entities Served 07.
City of Cabot	City Hall	Cabot & Austin Area
Owner 08.	Address 09. P.O. Drawer AD	
" " "	Cabot Ar. 72023	

10.

- [ ] 01 Inadequate information sign.
- [X] 02 Access not limited to operating hours.
- [ ] 03 Inadequate employee facilities.
- [ ] 04 Operator not certified.
- [ ] 05 Inadequate records.
- [X] 06 Unsatisfactory access roads.
- [X] 07 Evidence of open burning.
- [ ] 08 Dust or mud not properly controlled.
- [X] 09 Waste not confined to manageable area.
- [ ] 10 Unsatisfactory litter control.
- [X] 11 Improper spreading of waste.
- [X] 12 Improper compacting of waste.
- [X] 13 Unsatisfactory daily cover.
- [X] 14 Unsatisfactory intermediate cover.
- [X] 15 Unsatisfactory final cover.
- [X] 16 Improper drainage.
- [ ] 17 Dumping waste into water.
- [X] 18 Leachate observed at the site.
- [X] 19 Leachate entering a water course.
- [X] 20 Improper handling of special waste.
- [X] 21 Unapproved salvaging of waste.
- [ ] 22 Improper fire protection, emergency communications
- [ ] 23 Evidence of insects and vectors.
- [ ] 24 No provisions for backup equipment.
- [ ] 25 Operation does not correspond with engineering plans.

GENERAL COMMENTS Landfill is poorly operated at this time. Large amount of material was uncovered and placed in several areas of site at time of inspection. Re-inspection scheduled in 30 days

Type of waste disposed.		
12. 01 (✓) Residential 02 (✓) Commercial 03 (✓) Industrial 04 ( ) Demolition 05 ( ) Agricultural		
Person Interviewed 13. J.K. Spilley	Month 14.01: April · Day 14.02: 16 · Year 14.03: 1984 · Time 14.04: 1:00 PM	Weather conditions 15. Hot (Unusual Conditions)
Title 16. Operator	Reinspect prior to (date) 17. May 1984	
Inspected by (Signature) 18. S. K. McMullen	Title 19. Field Inspector	

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Solid Waste Control Division

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
SANITARY LANDFILL EVALUATION

CSR-430059

Name of site 01	Location (town, city) 02.	County 03.	Site No. 04.
Cabot SLF	Cabot	Lonoke	S-0198
Operator 05.	Address 06.	Entities Served 07.	
City of Cabot	City Hall	Cabot & [illegible] area	
Owner 08.	Address 09.		
--	P.O. Drawer AD Cabot AR. 72023		

10

- [ ] 01 Inadequate information sign.
- [ ] 02 Access not limited to operating hours.
- [ ] 03 Inadequate employee facilities.
- [ ] 04 Operator not certified.
- [ ] 05 Inadequate records.
- [ ] 06 Unsatisfactory access roads.
- [ ] 07 Evidence of open burning.
- [ ] 08 Dust or mud not properly controlled.
- [x] 09 Waste not confined to manageable area. N.E. corner needs pushing and covering.
- [ ] 10 Unsatisfactory litter control.
- [ ] 11 Improper spreading of waste.
- [ ] 12 Improper compacting of waste.
- [ ] 13 Unsatisfactory daily cover.
- [ ] 14 Unsatisfactory intermediate cover.
- [ ] 15 Unsatisfactory final cover.
- [ ] 16 Improper drainage.
- [ ] 17 Dumping waste into water.
- [ ] 18 Leachate observed at the site.
- [ ] 19 Leachate entering a water course.
- [ ] 20 Improper handling of special waste.
- [ ] 21 Unapproved salvaging of waste.
- [ ] 22 Improper fire protection, emergency communications
- [ ] 23 Evidence of insects and vectors.
- [ ] 24 No provisions for backup equipment.
- [ ] 25 Operation does not correspond with engineering plans.

GENERAL COMMENTS General operation of landfill is greatly improved. Some compacting and covering still needed on area noted above.

Type of waste disposed: 12. .01 (✓) Residential .02 (✓) Commercial .03 (✓) Industrial .04 (✓) Demolition .05 (✓) Agricultural		
Person Interviewed 13. M.E. [illegible]	Month 14.01 May; Day 14.02 21; Year 14.03 1984; Time 14.04 1:00 PM	Weather conditions 15. Dry
Title 16. Mayor	Reinspect prior to (date) 17.	
Inspected by (Signature) 18. S.K. McMullen	Title 19. Field Inspector	

jkm

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
LANDFILL INSPECTION AND EVALUATION

01. Name of site: Cabot SLF	02. Location (Town City): Cabot	03. County: Lonoke — 04. Permit No.: 0M8-S
05. Operator: City of Cabot	06. Address: City Hall	07. CSN #: 430054
08. Permittee: " " "	09. Address: Cabot Ar. 72023	10. Percent of Landfill Area Utilized: ☐ .01 Less than 25% ☐ .03 50% - 75% ☐ .02 25% - 50% ☐ .04 More than 75% ☑ .05 Not Determinable
11. Landfill classification: 01 ( ) Class I 02 ( ) Class II 03 ( ) Class III 04 ( ) Class IV 05 (✓) Unclassified		

12. CLASS I VIOLATIONS

- ☐ 01 Operation of an unpermitted facility
- ☐ 02 Evidence of open burning
- ☐ 03 Unsatisfactory daily cover
- ☐ 04 Unsatisfactory final cover
- ☐ 05 Improper drainage — OK
- ☐ 06 Dumping waste into water
- ☐ 07 Leachate discovered leaving the site
- ☐ 08 Leachate entering water course
- ☐ 09 Improper handling of special materials waste (waste material stockpiled in N.W. area of site has been covered.)
- ☐ 10 Accepting unapproved waste(s)
- ☐ 11 Operation does not correspond with engineering design and plans

13. CLASS II VIOLATIONS

- ☐ 01 Access not limited to operating hours
- ☐ 02 Unsatisfactory access roads
- ☐ 03 Waste not confined to manageable area
- ☐ 04 Unsatisfactory litter control
- ☐ 05 Improper spreading of waste — OK
- ☐ 06 Improper compacting of waste
- ☐ 07 Unsatisfactory intermediate cover
- ☐ 08 Evidence of leachate leaving the site
- ☐ 09 Improper fire protection, emergency communications (Radio communication system installed since last inspection
- ☐ 10 Evidence of vectors
- ☐ 11 No provisions for backup equipment

14. CLASS III VIOLATIONS

- ☐ 01 Inadequate information sign
- ☐ 02 Inadequate employee facilities
- ☐ 03 Inadequate records
- ☐ 04 Permit not posted at site
- ☐ 05 Engineering design and plans not available at site — OK
- ☐ 06 Unapproved salvaging of wastes
- ☐ 07 Scavenging of wastes
- ☐ 08 Leachate observed on site
- ☐ 09 Dust or mud not properly controlled
- ☐ 10 Accepting waste from inadequately covered vehicles
- ☐ 11 Operator not certified

15. GENERAL COMMENTS

Landfill operation has improved since last inspection. Special material in NW corner of site has been covered.

16. Type of waste disposed:

01 (✓) Residential — 02 (✓) Commercial — 03 (✓) Industrial (process)
04 (✓) Demolition — 05 (✓) Special materials — 06 ( ) Other (identify under general comments)

17. Person interviewed: J.W. Spivey — 18. Title: Operator	19. Address: S.A.A — 20. Phone	month 21.01: Nov.	day 21.02: 21	year 21.03: 1984	time 21.04: 1:30 pm
22. Inspected by (signature)	24. Reinspect prior to (date)				

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ARKA[illegible] DEPARTMENT OF POLLUTION CONT[illegible] AND ECOLOGY
LANDFILL INSPECTION AND EVALUATION

01. Name of site: City of Cabot SLF	02. Location (Town, City): Cabot	03. County: Lonoke	04. Permit No.: 0178-S
05. Operator: " "	06. Address: City Hall	07. CSN #: 430059	
08. Permittee: City of Cabot	09. Address: Cabot, AR. 72023	10. Percent of Landfill Area Utilized: ☐ .01 Less than 25% ☒ .02 25% - 50% ☐ .03 50% - 75% ☐ .04 More than 75% ☐ .05 Not Determinable	
11. Landfill classification: 01 (X) Class I 02 ( ) Class II 03 ( ) Class III 04 ( ) Class IV 05 ( ) Unclassified			

12. CLASS I VIOLATIONS
- [ ] 01 Operation of an unpermitted facility
- [ ] 02 Evidence of open burning
- [x] 03 Unsatisfactory daily cover — [illegible] corner of site has large area of [illegible]
- [ ] 04 Unsatisfactory final cover — material due to recent wet weather
- [ ] 05 Improper drainage
- [ ] 06 Dumping waste into water
- [x] 07 Leachate observed leaving the site — Leachate observed in NE corner of site.
- [ ] 08 Leachate entering water course
- [ ] 09 Improper handling of special materials waste
- [ ] 10 Accepting unapproved waste(s)
- [ ] 11 Operation does not correspond with engineering design and plans

13. CLASS II VIOLATIONS
- [ ] 01 Access not limited to operating hours
- [ ] 02 Unsatisfactory access roads
- [ ] 03 Waste not confined to manageable area
- [x] 04 Unsatisfactory litter control — Litter over large area of site.
- [ ] 05 Improper spreading of waste
- [ ] 06 Improper compacting of waste
- [ ] 07 Unsatisfactory intermediate cover
- [ ] 08 Evidence of leachate leaving the site
- [ ] 09 Improper fire protection, emergency communications
- [ ] 10 Evidence of vectors
- [ ] 11 No provisions for backup equipment

14. CLASS III VIOLATIONS
- [ ] 01 Inadequate information sign
- [ ] 02 Inadequate employee facilities
- [ ] 03 Inadequate records
- [x] 04 Permit not posted at site
- [x] 05 Engineering design and plans not available at site — Need information on site at all times
- [ ] 06 Unapproved salvaging of wastes
- [ ] 07 Scavenging of wastes
- [ ] 08 Leachate observed on site
- [ ] 09 Dust or mud not properly controlled
- [ ] 10 Accepting waste from inadequately covered vehicles
- [ ] 11 Operator not certified

15. GENERAL COMMENTS: Landfill is in poor condition at this time. Recent wet weather has contributed greatly to present operating problems.

SC

16. Type of waste disposed:
01 (X) Residential 02 (X) Commercial 03 (X) Industrial (process)
04 (X) Demolition 05 (X) Special materials 06 ( ) Other (identify under general comments)

17. Person Interviewed	19. Address	month 21.01	day 21.02	year 21.03	time 21.04
J W Spires	S. A. H	March	11	1985	
18. Title: Operator	20. Phone				
22. Inspected by (signature): S. K. [illegible]	24. Reinspect prior to (date)				

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ARI[illegible] DEPARTMENT OF POLLUTION CO[illegible] AND ECOLOGY
LANDFILL INSPECTION AND EVA[illegible]UATION

01. Name of site [illegible]	02. Location (Town, City) [illegible]	03. County [illegible] 04. Permit No. 0178-S
05. Operator [illegible]	06. Address [illegible]	07. CSN # #20253
08. Permittee [illegible]	09. Address [illegible] Ar 72?23	10. Percent of Landfill Area Utilized ☐ .01 Less than 25% ☐ .03 50% - 75% ☐ .02 25% - 50% ☐ .04 More than 75% ☒ .05 Not Determinable
11. Landfill classification 01 ( ) Class I 02 ( ) Class II 03 ( ) Class III 04 ( ) Class IV 05 (✓) Unclassified		

12. CLASS I VIOLATIONS
- [ ] 01 Operation of an unpermitted facility
- [ ] 02 Evidence of open burning
- [x] 03 Unsatisfactory daily cover — [illegible] April 1, 1985
- [x] 04 Unsatisfactory final cover — Equipment [illegible]
- [x] 05 Improper drainage — April 5, 1985
- [ ] 06 Dumping waste into water
- [ ] 07 Leachate observed leaving the site
- [ ] 08 Leachate entering water course
- [ ] 09 Improper disposal of special materials waste
- [x] 10 Accepting unapproved waste(s) — Kentucky Fried Chicken [illegible] allowed to dump [illegible] gallons on landfill April 9, 1985 [illegible] approximately [illegible]
- [x] 11 Operation does not correspond with engineering design and plans

13. CLASS II VIOLATIONS
- [ ] 01 [illegible]
- [ ] 02 [illegible] roads
- [x] 03 [illegible] — [illegible] landfill [illegible]
- [x] 04 [illegible] control — Litter scattered [illegible]
- [x] 05 Improper [illegible] of waste
- [x] 06 Improper [illegible] of waste
- [x] 07 Unsatisfactory intermediate cover
- [ ] 08 [illegible] leaving the site
- [ ] 09 [illegible] emergency communications
- [ ] 10 [illegible]
- [x] 11 [illegible] equipment

14. CLASS III VIOLATIONS
- [ ] 01 Inadequate information sign
- [ ] 02 Inadequate employee facilities
- [x] 03 Inadequate records
- [x] 04 Permit not posted at site
- [ ] 05 Engineering design and plans not available at site
- [x] 06 Improper [illegible] of wastes — [illegible] of waste scattered along [illegible] of work area
- [ ] 07 Scavenging of wastes
- [x] 08 [illegible] observed on site (South area of site.)
- [ ] 09 Dust or mud not properly controlled
- [ ] 10 Accepting waste from inadequately covered vehicles
- [ ] 11 Operator not certified

15. GENERAL COMMENTS No improvement in landfill operation since inspection conducted March 11, 1985. No response to written letter to Mayor regarding deficiencies. Site is in terrible condition at this time.

16. Type of waste disposed		
01 (✓) Residential	02 (✓) Commercial	03 (✓) Industrial (process)
04 (✓) Demolition	05 (✓) Special materials	06 ( ) Other (identify under general comments)

17. Person Interviewed	19. Address	month 21.01	day 21.02	year 21.03	time 21.04
[illegible]					
18. Title Operator	20. Phone [illegible]	April	11	1985	[illegible]

22. Inspected by (signature) [illegible]	24. Reinspect prior to (date)
23. Title [illegible] Inspector	25. Weather conditions Wet surface soil.

INSPECTOR COPY - WHITE FACILITY COPY - BLUE RESPONSIBLE PARTY COPY - GREEN DEPARTMENT COPY - PINK ADC-CDC-2182

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ARKA[illegible]AS DEPARTMENT OF POLLUTION CON[illegible]L AND ECOLOGY
LANDFILL INSPECTION AND EVALUATION

01. Name of site: [illegible]	02. Location (Town City): [illegible]	03. County: [illegible] 04. Permit No.: [illegible]
05. Operator: [illegible]	06. Address: [illegible]	07. CSN #: [illegible]
08. Permittee: [illegible]	09. Address: [illegible]	10. Percent of Landfill Area Utilized: ☐ 01 Less than 25% ☐ 02 25% - 50% ☐ 03 50% - 75% ☐ 04 More than 75% ☐ 05 Not Determinable
11. Landfill Classification: 01 [X] Class I 02 [ ] Class II 03 [ ] Class III 04 [ ] Class IV 05 [ ] Unclassified		

12. CLASS I VIOLATIONS

- [ ] 01 Operation of an unpermitted facility
- [ ] 02 Evidence of open burning
- [X] 03 Unsatisfactory daily cover [illegible]
- [X] 04 Unsatisfactory final cover [illegible]
- [X] 05 Improper drainage [illegible]
- [ ] 06 Dumping waste into water
- [ ] 07 Leachate observed leaving site
- [ ] 08 [illegible] water source
- [X] 09 [illegible] of special waste [illegible]
- [ ] 10 Acceptance of [illegible] wastes
- [ ] 11 Operation does not correspond with engineering design and plans

13. CLASS II VIOLATIONS

- [ ] 01 Access [illegible] to operating hours
- [ ] 02 Unsatisfactory access roads
- [X] 03 Waste not confined to manageable area [illegible]
- [X] 04 Unsatisfactory [illegible] control
- [X] 05 Improper [illegible] of waste
- [X] 06 Improper compaction of waste
- [X] 07 Unsatisfactory intermediate cover
- [ ] 08 Evidence of leachate leaving the site
- [ ] 09 Improper fire protection, emergency communications
- [ ] 10 Evidence of vectors
- [ ] 11 No [illegible] for backup equipment

14. CLASS III VIOLATIONS

- [ ] 01 Inadequate information sign
- [X] 02 Inadequate employee facilities [illegible]
- [ ] 03 Inadequate records
- [ ] 04 Permit not posted at site
- [ ] 05 Engineer of design and plans not available at site
- [ ] 06 Unsatisfactory weighing of waste
- [ ] 07 Scavenging of wastes
- [ ] 08 Leachate observed on site
- [ ] 09 Dust or mud not properly controlled
- [ ] 10 Accepting waste from inadequately covered vehicles
- [ ] 11 Operator not certified

15. GENERAL COMMENTS

[illegible] improvement in site is ~~material~~ along [illegible] entrance road [illegible] since April 11, 1985 ~~inspection~~

16. Type of waste disposed: 01 [X] Residential 02 [X] Commercial 03 [X] Industrial process 04 [X] Demolition 05 [X] Special materials 06 [ ] Other (identify under general comments)					
17. Person Interviewed: [illegible] 18. Title: [illegible]	19. Address: S.A.A. 20. Phone	month 21.01: April	day 21.02: 16	year 21.03: 1985	time 21.04: [illegible]
22. Inspected by (signature)	24. Reinspect prior to (date)				

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ARKA S DEPARTMENT OF POLLUTION CONT L AND ECOLOGY
LANDFILL INSPECTION AND EVALUATION

01. Name of site: City of Cabot SLF	02. Location (Town, City): Cabot	03. County: Lonoke — 04. Permit No. 0178-S
05. Operator: City of Cabot	06. Address: PO Drawer [illegible]	07. CSN #: 430059
08. Permittee: " " "	09. Address: Cabot Ar 72023	10. Percent of Landfill Area Utilized: ☐ .01 Less than 25% ☐ .03 50% - 75% ☒ .02 25% - 50% ☐ .04 More than 75% ☐ .05 Not Determinable
11. Landfill classification: 01 (X) Class I 02 ( ) Class II 03 ( ) Class III 04 ( ) Class IV 05 ( ) Unclassified		

12. CLASS I VIOLATIONS
- ☐ 01 Operation of an unpermitted facility
- ☐ 02 Evidence of open burning
- ☒ 03 Unsatisfactory daily cover [illegible]
- ☒ 04 Unsatisfactory final cover [illegible] due to broken equipment.
- ☐ 05 Improper drainage
- ☐ 06 Dumping waste into water
- ☐ 07 Leachate observed leaving the site
- ☐ 08 Leachate entering water course
- ☒ 09 Improper handling of special materials waste Large area of [illegible]
- ☐ 10 Accepting unapproved waste(s)
- ☐ 11 Operation not correspond with engineering design and plans

13. CLASS II VIOLATIONS
- ☐ 01 Access not limited to operating hours
- ☐ 02 Unsatisfactory access roads
- ☒ 03 Waste not confined to manageable area Large area of waste in NE area of site [illegible] SE corner.
- ☐ 04 Unsatisfactory litter control
- ☒ 05 Improper spreading of waste
- ☒ 06 Improper compacting of waste
- ☒ 07 Unsatisfactory intermediate cover
- ☐ 08 Evidence of leachate leaving the site
- ☐ 09 Improper fire protection, emergency communications
- ☐ 10 Evidence of vectors
- ☐ 11 No provision for backup equipment

14. CLASS III VIOLATIONS
- ☐ 01 Inadequate information sign
- ☒ 02 Inadequate employee facilities No water or [illegible] on site.
- ☐ 03 Inadequate records
- ☐ 04 Permit not posted at site
- ☐ 05 Engineering design and plans not available at site
- ☐ 06 Unapproved salvaging of wastes
- ☐ 07 Scavenging of wastes
- ☐ 08 Leachate observed on site
- ☐ 09 Dust or mud not properly controlled
- ☐ 10 Accepting waste from inadequately covered vehicles
- ☐ 11 Operator not certified

15. GENERAL COMMENTS Overall operation in poor condition. Some improvement noted since last inspection.

16. Type of waste disposed: 01 (X) Residential 02 (X) Commercial 03 (X) Industrial (process) 04 (X) Demolition 05 (X) Special materials 06 ( ) Other (identify under general comments)					
17. Person Interviewed: J W Akins	19. Address: S.A.A	month 21.01: June	day 21.02: 12	year 21.03: 1985	time 21.04: 9:30 am
18. Title: Operator	20. Phone				
22. Inspected by (signature): [illegible]	24. Reinspect prior to (date)				

ARKA S DEPARTMENT OF POLLUTION CONT _ AND ECOLOGY
LANDFILL INSPECTION AND EVALUATION

01 Name of site: City of Cabot SLF	02. Location (Town, City): Cabot	03. County: Lonoke — 04. Permit No. 0178-S
05 Operator: City of Cabot	06. Address: P.O. Drawer HD	07. CSN #: 430059
08 Permittee: " " "	09. Address: Cabot, Ar. 72023	10. Percent of Landfill Area Utilized: [ ] .01 Less than 25% [ ] .03 50% - 75% [ ] .02 25% - 50% [ ] .04 More than 75% [X] .05 Not Determinable
11 Landfill classification: 01 [X] Class I 02 [ ] Class II 03 [ ] Class III 04 [ ] Class IV 05 [ ] Unclassified		

12. CLASS I VIOLATIONS

Fill area off site of permit area

- [ ] 01 Operation of an unpermitted facility
- [ ] 02 Evidence of open burning
- [X] 03 Unsatisfactory daily cover: Area of garbage — SW corner uncovered.
- [X] 04 Unsatisfactory final cover: " " " " " " "
- [ ] 05 Improper drainage
- [X] 06 Dumping waste into water: Current dump pit in SW area has seep water polluting trench.
- [ ] 07 Leachate observed leaving the site
- [ ] 08 Leachate entering water course
- [ ] 09 Improper handling of special materials waste
- [ ] 10 Accepting unapproved waste(s)
- [X] 11 Operation does not correspond with engineering design and plans: Present site not in permitted area

13. CLASS II VIOLATIONS

- [ ] 01 Access not limited to operating hours
- [ ] 02 Unsatisfactory access roads
- [X] 03 Waste not confined to manageable area
- [X] 04 Unsatisfactory litter control
- [X] 05 Improper spreading of waste
- [X] 06 Improper compacting of waste
- [X] 07 Unsatisfactory intermediate cover

Applicable to several areas of site.

- [ ] 08 Evidence of leachate leaving the site
- [ ] 09 Improper fire protection, emergency communications
- [ ] 10 Evidence of vectors
- [ ] 11 No provision for backup equipment

14. CLASS III VIOLATIONS

- [ ] 01 Inadequate information sign
- [ ] 02 Inadequate employee facilities
- [ ] 03 Inadequate records
- [ ] 04 Permit not posted at site
- [ ] 05 Engineering design and plans not available at site
- [ ] 06 Unaccordized salvaging of wastes
- [X] 07 Scavenging of wastes: Individual collecting [illegible] insulation material at [illegible] area North of present work site.
- [ ] 08 Leachate observed on site
- [ ] 09 Dust or mud not properly controlled
- [ ] 10 Accepting waste from inadequately covered vehicles
- [ ] 11 Operator not certified

15 GENERAL COMMENTS

Overall operation continues to be very poorly maintained.

16. Type of waste disposed: 01 [X] Residential 02 [X] Commercial 03 [X] Industrial (process) 04 [X] Demolition 05 [X] Special materials 06 [ ] Other (identify under general comments)					
17. Person interviewed: Jw Appley	19. Address	month 21.01	day 21.02	year 21.03	time 21.04
18. Title: Operator	20. Phone: S.A.A.	July	12	1985	10:00 a.m.
22. Inspected by (signature)	24. Reinspect prior to (date)				

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IF THE PAGE FILMED IS NOT AS LEGIBLE AS THIS LABEL, IT IS DUE TO THE QUALITY OF THE ORIGINAL.

ARKA... S DEPARTMENT OF POLLUTION CONT... AND ECOLOGY
LANDFILL INSPECTION AND EVALUATION

01. Name of site: City of Cabot SLF	02. Location (Town, City): Cabot	03. County: Lonoke	04. Permit No.: 0178-S
05. Operator	06. Address: City Hall	07. CSN #: 43-0059	
08. Permittee: City of Cabot	09. Address: Cabot, Ar. 72023	10. Percent of Landfill Area Utilized: ☐ 01 Less than 25% ☐ 02 25% - 50% ☐ 03 50% - 75% ☒ 04 More than 75% ☐ 05 Not Determinable	
11. Landfill classification: 01 ☒ Class I 02 ( ) Class II 03 ( ) Class III 04 ( ) Class IV 05 ( ) Unclassified			

12. CLASS I VIOLATIONS
- ☐ 01 Operation of an unpermitted facility
- ☒ 02 Evidence of open burning: Old area — evidence of burning
- ☒ 03 Unsatisfactory daily cover: Large areas in old area and ... area
- ☒ 04 Unsatisfactory final cover
- ☐ 05 Improper drainage
- ☐ 06 Dumping waste into water
- ☐ 07 Leachate ... leaving the site
- ☐ 08 Leachate ... water course
- ☐ 09 Improper ... of special materials waste
- ☐ 10 Accept... unapproved waste(s)
- ☐ 11 ... not correspond with engineering design and plans

13. CLASS II VIOLATIONS
- ☐ 01 Access not ... to operating hours
- ☐ 02 Un... access roads
- ☒ 03 ... to manageable area: Large amount of material in several areas
- ☒ 04 Unsatisfactory litter control: Several areas of site have litter.
- ☒ 05 Improper ... of waste: Present work area.
- ☒ 06 Improper compacting of waste
- ☒ 07 Unsatisfactory intermediate cover
- ☐ 08 E... leachate leaving the site
- ☐ 09 Improper fire protection, emergency communications
- ☐ 10 Evidence of vectors
- ☐ 11 No pro... for backup equipment

14. CLASS III VIOLATIONS
- ☐ 01 Inadequate information sign
- ☒ 02 Inadequate employee facilities: No running water on site, restrooms.
- ☐ 03 Inadequate records
- ☐ 04 Permit not posted at site
- ☐ 05 Engineer... design and plans not available at site
- ☐ 06 Unapproved salvaging of wastes
- ☐ 07 Scavenging of wastes
- ☐ 08 Leachate observed on site
- ☐ 09 Dust or mud not properly controlled
- ☐ 10 Accepting waste from inadequately covered vehicles
- ☐ 11 Operator not certified

15. GENERAL COMMENTS: Landfill is in very poor condition. Present use area is off permitted site.

16. Type of waste disposed: 01 ☒ Residential 02 ☒ Commercial 03 ☒ Industrial (process) 04 ☒ Demolition 05 ☒ Special materials 06 ( ) Other (identify under general comments)					
17. Person Interviewed: J. W. Spires	19. Address: C.H.	month 21.01: Sept.	day 21.02: 11	year 21.03: 1985	time 21.04: 9:70 Hrs
18. Title: Operator	20. Phone				
22. Inspected by (signature)	24. Reinspect prior to (date)				

13

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
LANDFILL INSPECTION AND EVALUATION

01. Name of site: City of Cabot SLF	02. Location (Town, City): Cabot	03. County: Lonoke — 04. Permit No.: 0178-S
05. Operator: " " "	06. Address: [illegible] Rd	07. CSN #: 430059
08. Permittee: City of Cabot	09. Address: Cabot, Ar. 72023	10. Percent of Landfill Area Utilized: ☐ 01 Less than 25% ☐ 02 25% - 50% ☐ 03 50% - 75% ☒ 04 More than 75% ☐ 05 Not Determinable
11. Landfill classification: 01 ☒ Class I 02 ☐ Class II 03 ☐ Class III 04 ☐ Class IV 05 ☐ Unclassified		

12. CLASS I VIOLATIONS
- ☐ 01 Operation of an unpermitted facility
- ☐ 02 Evidence of open burning
- ☐ 03 Unsatisfactory daily cover
- ☐ 04 Unsatisfactory final cover
- ☐ 05 Improper drainage
- ☐ 06 Dumping waste into water
- ☐ 07 Leachate [illegible]
- ☐ 08 Leachate entering water course
- ☐ 09 Improper handling of special (hazardous) waste
- ☐ 10 Accepting [illegible] wastes
- ☐ 11 Operation not corresponding with engineering design and plans

Presently working on site closure.

13. CLASS II VIOLATIONS
- ☐ 01 [illegible]
- ☐ 02 [illegible]
- ☐ 03 [illegible]
- ☐ 04 [illegible]
- ☐ 05 [illegible]
- ☐ 06 [illegible]
- ☐ 07 [illegible]
- ☐ 08 [illegible]
- ☐ 09 [illegible]
- ☐ 10 [illegible]
- ☐ 11 [illegible]

14. CLASS III VIOLATIONS
- ☐ 01 Inadequate [illegible]
- ☐ 02 Inadequate [illegible]
- ☐ 03 Inadequate records
- ☐ 04 Permits not posted at site
- ☐ 05 Engineering [illegible] and plans not available at site
- ☐ 06 Unscreened receipt of wastes
- ☐ 07 Scavenging of wastes
- ☐ 08 Leachate observed on site
- ☐ 09 Dust or mud not properly controlled
- ☐ 10 Accepting [illegible] from inadequately covered vehicles
- ☐ 11 Operator not certified

15. GENERAL COMMENTS: Mr. Spikes states City of Cabot has not accepted garbage or other material at landfill since Oct 1, 1985. He states the City of Cabot is now hauling such material to [illegible] SLF. Mr. Spikes is presently working to close site and will notify ADPC&E upon completion of closure. Inspector posted a site entrance advising "Landfill Closed."

16. Type of waste disposed		
01 ☒ Residential	02 ☒ Commercial	03 ☒ Industrial (process)
04 ☒ Demolition	05 ☒ Special materials	06 ☐ Other (identify under general comments)

17. Person Interviewed: J. W. Spikes	19. Address: S.A.A.	month 21.01	day 21.02	year 21.03	time 21.04 (A-M)
18. Title: Operator	20. Phone: 843-3566	Oct.	29	1985	11:00

22. Inspected by (signature): S. K. [illegible]	24. Reinspect prior to (date): 30 - 45 days, Progress Report
23. Title: [illegible] III	25. Weather conditions: [illegible]

DEPARTMENT COPY - WHITE FACILITY COPY - BLUE RESPONSIBLE PARTY COPY - GREEN INSPECTOR COPY - PINK

14

REFERENCE 35

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Drawer E, Lonoke, AR 72086

SUBJECT: SANITARY LANDFILL SITE

DATE: 7-12-77

TO: Mayor
City of Cabot
Cabot, AR 72023

A soils investigation was made on a site in the E½, SW¼ of section 25, T4N, R10W, Lonoke County.

Soil borings indicated that four soils were present. (Note attached overlay). The soils were Amy, Leadvale, Sacul, and Taft.

Amy soils have severe limitations for sanitary landfills because of frequent flooding and wetness.

Leadvale soils have moderate limitations because of wetness. This restriction is related to operation problems and not pollution hazards.

Sacul soils have severe limitations because of being clayey. This restriction is related to operation problems and not pollution hazards.

Taft soils have severe limitations because of wetness. This restriction is related to operation problems.

If we can be of assistance in the future, please call us.

Richard T. Fielder

Richard T. Fielder
Soil Scientist
Soil Conservation Service

REFERENCE 36

IF THE PAGE FILMED IS NOT AS LEGIBLE AS THIS LABEL, IT IS DUE TO THE QUALITY OF THE ORIGINAL.

'ORT OF WATER WELL CONSTRUCTIO

New Well ____ Work over Well ____ Replacement Well X

Owner of Well [redacted]

County Lonoke

[redacted]

Well Contractor Owen Drilling Co

Driller Name and No. G L Owen 02232

Date Well was Completed June 2-81

Total Depth of Well 80 Ft.

Water Producing Formation From 30 Ft. To ____ Ft.

Water Level Below Land Surface 25

Gallons per Hour 50

Well Disinfected with HTH

Casing to 80 Ft.

Cased with 30 Diameter Concrete Casing

Cemented from 0 Ft. to 10 Ft.

Use of Well: Domestic ✓ Irrigation ____ Municipal ____ Other ____

Description and Color of Formation (sand, shale, sandstone, etc.)	Depths from	in feet to
Clay	0	80

Remarks:

Signed: G L Owen Date: 6-2-81

Form No. AWD-3

Mail to: Committee on Water Well Construction, 2915 So. Pine Street, Little Rock, Arkansas 72204

GEOLOGY COPY

STATE OF ARKANSAS

REPORT OF WATER WELL CONSTRUCTION

Well X Work over Well ____ Replacement Well ____

Owner of Well [redacted]

County Lonoke

[redacted]

Contractor [illegible] Co.

Driller Name and No. [illegible]

Date Well was Completed 12-10-81

Total Depth of Well 105' Ft.

Water Producing Formation From 60 Ft. To 105 Ft.

Water Level Below Land Surface 60

Gallons per Hour 400

Well Disinfected with [illegible]

Casing to 100 Ft.

Cased with 2 Diameter [illegible] Casing

Cemented from ____ Ft. to ____ Ft.

Use of Well: Domestic 1 Irrigation ____ Municipal ____ Other ____

Description and Color of Formation (sand, shale, sandstone, etc.)	Depths from	in feet to
[illegible]	1	40
[illegible]	40	60
[illegible]	60	105

Remarks:

Signed: [illegible] Date: 12-10-81

No. AWD-3

Mail to: Committee on Water Well Construction, 2915 So. Pine Street, Little Rock, Arkansas 72204

GEOLOGY COPY

IF THE PAGE FILMED IS NOT AS LEGIBLE AS THIS LABEL, IT IS DUE TO THE QUALITY OF THE ORIGINAL.

STATE OF ARKANSAS

REPORT OF WATER WELL CONSTRUCTI

New Well ✓ Work-over Well ____ acement Well ____

County Lonoke (in which well is located)

Owner of Well [redacted]

[redacted]

Contractor Fred Gordon c1090

Driller Name and No. Fred Gordon 2171

Date Well was Completed 9-24-81

1. Total Depth of Well 73 Ft.
2. Water Producing Formation: From 20 Ft. To 73 Ft.
3. Water Level Below Land Surface 30
4. Gallons per Hour 600
5. Well Disinfected with Chlorine
6. Casing to 68 Ft.
7. Cased with Plastic Diameter 2" Casing
8. Cemented from ____ Ft. to ____ Ft.
9. Use of Well: Domestic ✓ Irrigation ____ Municipal ____ Other ____

Description and Color of Formation (sand, shale, sandstone, etc.)	Depths from	in feet to
Red clay	1	10
Brown clay	10	18
Brown Sand	18	73

Remarks:

Signed: Fred Gordon Date: 9-24-81

Form No. AWD-3

Mail to: Committee on Water Well Construction, 2915 So. Pine Street, Little Rock, Arkansas 72204

GEOLOGY COPY

REFERENCE 37

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GEMS> I

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LATITUDE   34:59:45   LONGITUDE   92: 1: 0      1980 POPULATION
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KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	0	0	0	0	0
S 2	0	6	0	259	18	0	283
S 3	0	0	0	0	137	1324	1461
S 4	0	0	1271	734	2902	208	5115
S 5	0	0	0	0	0	0	0
S 6	0	0	0	299	0	0	299
[illegible]	0	6	1271	1292	3057	1532	7158

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Accurat
[illegible]
10/92

REFERENCE 38

#7

RECORD OF COMMUNICATION

TYPE: Telephone Call **DATE:** 1-2-91 **TIME:** 2:30 p.m.

TO: Bobby Makin
Assistant Director - Engineering
Arkansas Department of Health
501-661-2623

FROM: Steve Cowan Steve Cowan
FIT Biologist
ICF Technology, Inc.
Dallas, Texas
214-744-1641

SUBJECT: Arkansas Wellhead Protection Program: Plainview, Arkansas

SUMMARY OF COMMUNICATION

The Arkansas Wellhead Protection Program was approved by EPA Region VI in September 1990. At the present time, all public water supply wells are protected. A ¼ mile radius exists for every public supply well.

Mr. Makin informed the FIT that Plainview, Arkansas does not have any wells under protection due to the fact that Plainview obtains its drinking water from Nimrod Lake.

When asked about park wells, Mr. Makin stated that they are classified as non-community water wells used for public consumption, thus they would be protected.

CONCLUSIONS, ACTION TAKEN OR REQUIRED:

The two wells at Sunlight Bay Park are protected under the Arkansas Wellhead Protection Program.

REFERENCE 39

ARKANS DEPARTMENT OF POLLUTION CONTRO AND ECOLOGY

MEMORANDUM

REFERENCE: 13

TO : Doice Hughes, Inspector Supervisor-Hazardous Waste, TSB

FROM : Mike Bates, Hazardous Waste Inspector, TSB MB

DATE : February 24, 1981

SUBJECT: Drums of Hazardous Materials at Cabot Sanitary Landfill

Field Inspectors from the Enforcement Branch report several drums of materials at the Cabot Sanitary Landfill. Several of the drums had labels stating that the drum, when emptied, would be hazardous.

I visited the Cabot Sanitary Landfill on February 19, 1981, with Randy Gresham, to investigate the drums. We observed thirty-four 55 gallon drums; several drums were bulged at the ends. The majority of the drums were labeled as paint stripper or contact adhesive. The shipping address was Falcon Jet of Little Rock. There was one drum addressed to Dreamline Manufacturing, Cabot. The top of the drum was labeled laquer sealer and appears to have burnt approximately 3/4 of the way down.

Two of the drums of Pennwalt EZ-Strip were laying on their side and leaking. There was also one of the adhesive drums that had been leaking - self sealed.

According to the landfill operator, the drums have been on site since before August, 1980.

We went by Dreamline Manufacturing to explain the situation to them. We met with Steve Tipton and his father. Steve Tipton was very cordial and receptive. I explained that Dreamline, as the apparent generator of the waste, would be responsible for determining the nature of the waste in the drum and, if hazardous, dispose it in an authorized landfill.

I asked the Tipton's if they had any hazardous waste. They replyed that to their knowledge they did not. I asked if they were aware of RCRA and the hazardous waste regulations; they were not. They also stated that they did not receive a notification packet from EPA. Dreamline is a furniture manufacturer. In their production line, they had spray booths which use dry filters. I explained that their paint residue would have to be tested according to the characteristics tests and referred them to the May 19, 1980, Federal Register.

The senior Tipton told us that we could get all this information from his suppliers without bothering him with it. He got very upset when I told him the Department did not have the resources to track this and that it was the generator's responsibility to determine if his waste was hazardous or not.

I requested that a letter be sent to us stating what Dreamline was going to do with the waste at the Cabot Sanitary Landfill.

I contacted Bill Honeycut of Falcon Jet and explained what we found and advised him that the barrels would have to be removed and disposed properly. Mr. Honeycutt stated that they (Falcon Jet) had some raw materials "go bad" last summer and ordered the warehouse foreman to get rid of it. He said he would have the barrels picked up and send us a letter concerning the status of the waste.

cc: Cabot Sanitary Landfill File ✓

REFERENCE 40

ZCN: H30059

STATE OF ARKANSAS R ERENCE: 11

DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 NATIONAL DRIVE, P.O. BOX 9583
LITTLE ROCK, ARKANSAS 72209

January 6, 1987

PHONE: (501) 562-7444

The Honorable N.E. Smith
Mayor, City of Cabot
City Hall, Drawer AD
Cabot, Arkansas 72023

Dear Mayor Smith:

Please recall a visit to your closed sanitary landfill on December 12, 1986, by S.K. McMullen and I. This visit revealed that the facility is 75% closed out but lacks point work at a number of spots to bring up the final contours of the cover. Further, areas that have received final cover must be seeded or sodded to reduce water percolation and leachate generation as well as to prevent soils erosion.

Should leachate become a factor in the areas that have evidence of receiving poor quality cover, the Department retains the right to require correction by diversion berms or ditches to prevent runon water or the supercharging of the area affected by the addition of cover soils greater than normal close-out requirements.

The Division has set a final closure date for the facility at September 15, 1987. However, if final closure is accomplished prior to this date please advise me.

We appreciate your efforts in accomplishing this task for your City and are aware of the expense necessary to accomplish an environmentally sound closure and realize that while time frames are necessary in any undertaking, we cannot set unrealistic goals.

If you should need additional information of technical assistance, do not hesitate to contact me.

Sincerely,

J Bearden

Jim Bearden, R.S.
Coordinator
Solid Waste Division

JB:jfs

cc: Sam McMullen, EPS
City of Cabot File

REFERENCE 41

KOONCE

Soil Survey of

Lonoke and Prairie Counties Arkansas

United States Department of Agriculture, Soil Conservation Service
In cooperation with
Arkansas Agricultural Experiment Station

LONOKE AND PRAIRIE COUNTIES ARKANSAS — SHEET NUMBER 16

UNITED STATES DEPARTMENT OF AGRICUL
SOIL CONSERVATION SERVICE

LONOKE AND PRAIRIE COU

SOIL LEGEND

SYMBOL	NAME
1	Amy silt loam, frequently flooded
2	Calhoun silt loam, 0 to 1 percent slopes
3	Calloway silt loam, 0 to 1 percent slopes
4	[illegible] silt loam, 0 to 1 percent slopes
5	Commerce silt loam, 0 to 1 percent slopes
6	Commerce silt loam, frequently flooded
7	Crowley silt loam, 0 to 1 percent slopes
8	Dubbs silt loam, 0 to 1 percent slopes
9	Dubbs silt loam, 1 to 3 percent slopes
10	Enders stony fine sandy loam, 8 to 15 percent slopes
11	Hebert silt loam, 0 to 1 percent slopes
12	Jackport silty clay loam, 0 to 1 percent slopes
13	Jackport silty clay loam, 1 to 3 percent slopes
14	[illegible] silt loam, 0 to 1 percent slopes
15	[illegible] silt loam, 1 to 3 percent slopes
16	Kobel silty clay loam, 0 to 1 percent slopes
17	Kobel silty clay loam, frequently flooded
18	[illegible] silt loam, 1 to 3 percent slopes
19	[illegible] silt loam, 3 to 8 percent slopes
20	Linker-Enders-Mountainburg complex, 12 to 25 percent slopes
21	Loring silt loam, 1 to 3 percent slopes
22	Loring silt loam, 3 to 8 percent slopes
23	Loring-McKamie complex, 8 to 20 percent slopes
24	Moreland silty clay, 0 to 1 percent slopes
25	Muskogee silt loam, 3 to 8 percent slopes
26	Oaklimeter silt loam, occasionally flooded
27	Perry silty clay, 0 to 1 percent slopes
28	Perry silty clay, frequently flooded
29	Portland silty clay, 0 to 1 percent slopes
30	Rilla silt loam, 0 to 1 percent slopes
31	Rilla silt loam, 1 to 3 percent slopes
32	Sacul fine sandy loam, 3 to 8 percent slopes
33	Sawyer silt loam, 3 to 8 percent slopes
34	Smithdale sandy loam, 5 to 8 percent slopes
35	Stuttgart silt loam, 0 to 1 percent slopes
36	Stuttgart silt loam, 1 to 3 percent slopes
37	[illegible] silt loam, 0 to 2 percent slopes
38	Tichnor silt loam, frequently flooded
39	Yorktown silty clay

The legend is numeric. Soils without a slope designation in the name are those that are found only on nearly level landscapes of occasionally or frequently flooded bottom lands.

CU
BOUNDAR
Nation
Count
Minor
LAND
ROADS
Trail
ROAD
RAILRO
POWER
PIPE LI
FENCE
LEVEES
DAMS
Large

about 20 inches. The lower part is gray, mottled silty clay that extends to a depth of about 56 inches. The underlying material is gray, mottled silty clay that extends to a depth of 72 inches or more.

This soil is high in natural fertility and moderate in organic matter content. Reaction ranges from medium acid to neutral in the surface layer, from slightly acid to moderately alkaline in the subsoil, and from neutral to moderately alkaline in the underlying material. Permeability is very slow, and the available water capacity is high. A perched high water table is within 1 foot of the surface in winter and early in spring. Flooding is frequent and normally occurs between October and May. This soil shrinks and cracks when dry, and the cracks seal when the soil is wet.

Included with this soil in mapping are a few small areas of Commerce soils and a few small areas of soils that have a silty clay surface layer.

This soil is poorly suited to cultivated crops because of frequent flooding that occurs in most years. Crops that require a short growing season, such as soybeans, can be grown, but flooding is likely to damage the crop in some years.

This soil is moderately suited to use as pasture and as hayland. Wetness and flooding are the main limitations to these uses. Pasture plants that grow well on this soil include bermudagrass and tall fescue.

This soil is well suited to use as woodland. Trees that commonly grow on this soil are green ash, sweetgum, water hickory, and water oak. Wetness and flooding severely limit the use of equipment in managing and harvesting the tree crop, but these limitations can be partially overcome by using special equipment and harvesting during the drier seasons.

This soil is severely limited for urban uses. Wetness, high shrink-swell potential, and flooding are severe limitations to its use as sites for dwellings, small commercial buildings, local roads and streets, and septic tank filter fields. Overcoming these limitations is difficult or impractical.

This soil is in capability unit IVw-2 and woodland suitability group 3w6.

18—Leadvale silt loam, 1 to 3 percent slopes. This deep, nearly level, moderately well drained soil is on toe slopes of ridges, benches, and terraces in the Arkansas Valley. Areas range from about 20 to 800 acres.

Typically, the surface layer is dark brown silt loam about 6 inches thick. The upper part of the subsoil is strong brown silt loam and silty clay loam that extends to a depth of 20 inches. The middle part is yellowish brown, mottled silty clay loam that extends to a depth of 28 inches. The lower part is a brittle fragipan which is yellowish brown, mottled silty clay loam and silt loam that extends to a depth of 72 inches or more.

This soil is low in both natural fertility and organic matter content. This soil is very strongly acid or strongly acid except where it has been limed. Permeability is slow, and the available water capacity is medium. This soil has a compact, brittle fragipan at about 18 to 36 inches. The pan restricts the penetration of roots and the movement of water through the soil. A perched water table is within 2 to 3 feet of the surface in winter and early in spring.

Included with this soil in mapping are a few small areas of Enders, Sawyer, Sacul, and Taft soils and a few small areas of soils that are similar to Leadvale soils but have more sand in the profile.

This soil is well suited to row crops and winter small grain. The main crops are pasture, hay, and soybeans. Winter small grains and truck crops are also grown on this soil. Erosion is a moderate hazard if row crops are grown. Minimum tillage, contour farming, and the use of cover crops are practices that help reduce runoff and control erosion. This soil responds well to fertilization, and tilth is easy to maintain by returning crop residue to the soil.

This soil is well suited to use as pasture and as hayland. Pasture plants that grow well on this soil include bermudagrass, bahiagrass, and tall fescue.

This soil is well suited to use as woodland. Trees that commonly grow on this soil are southern red oak, white oak, and loblolly pine. There are no significant limitations to woodland use or management.

This soil is moderately suited to most urban uses. Its use as septic tank filter fields is severely limited by slow permeability and wetness. Its use as sites for dwellings, small commercial buildings, and local roads and streets is moderately limited by wetness. Low strength is an additional moderate limitation to the use of this soil as sites for local roads and streets. These limitations can generally be overcome by proper engineering design and drainage.

This soil is in capability unit IIe-2 and woodland suitability group 3o7.

19—Leadvale silt loam, 3 to 8 percent slopes. This deep, gently sloping, moderately well drained soil is on toe slopes of ridges, benches, and terraces in the Arkansas Valley. Areas range from about 20 to more than 1,000 acres.

Typically, the surface layer is dark brown silt loam about 6 inches thick. The upper part of the subsoil is strong brown silt loam and silty clay loam that extends to a depth of about 20 inches. The middle part is yellowish brown, mottled silty clay loam that extends to a depth of about 28 inches. The lower part of the subsoil is a brittle fragipan which is mottled yellowish brown, light brownish gray, and strong brown silty clay loam and silt loam that extends to a depth of 72 inches or more.

This soil is low in both natural fertility and organic matter content. This soil is very strongly acid or strongly acid except where it has been limed. Permeability is slow, and the available water capacity is medium. This soil has a compact, brittle fragipan at about 18 to 36 inches. The pan restricts the penetration of roots and the movement of water through the soil. A perched water table is within 2 to 3 feet of the surface in winter and early in spring.

Included with this soil in mapping are a few areas of Enders, Sawyer, Sacul, and Taft soils and a few areas of soils that are similar to Leadvale soils but have more sand in the profile.

This soil is used mainly for pasture, hay, and soybeans (fig. 2). It is moderately suited to row crops and winter small grains. Runoff is medium to rapid, and erosion is a severe hazard. Practices such as minimum tillage, contour farming, and the use of cover crops help reduce runoff and control erosion. Conservation practices need to be intensified as slope length and gradient increase.

This soil is well suited to use as pasture and as hayland. Pasture plants that grow well on this soil include bermudagrass, bahiagrass, and tall fescue.

This soil is well suited to use as woodland. Trees that commonly grow on this soil are loblolly pine, white oak, and southern red oak. There are no significant limitations to woodland use or management of this soil.

This soil is moderately suited to most urban uses. Its use as septic tank filter fields is severely limited by low permeability and wetness. Its use as sites for dwellings is moderately limited by wetness. Its use as sites for small commercial buildings is moderately limited by wetness and slope. Its use as sites for local roads and streets is moderately limited by wetness and low strength. These

Figure 2.—Pasture and loblolly pine on Leadvale silt loam, 3 to 8 percent slopes.

The A horizon ranges from 6 to 12 inches in thickness. It has hue of 7.5YR, value of 4 or 5, and chroma of 2 or 4; or it has hue of 10YR, value of 4, and chroma of 3 or 4.

The B horizon has hue of 7.5YR, value of 4 or 5, and chroma of 2 or 4. Texture is very fine sandy loam or silt loam.

The materials underlying the B horizon have hue of 7.5YR, value or 4 or 5, and chroma of 4. Texture is fine sandy loam, very fine sandy loam, silt loam, or silty clay loam.

Kobel series

The Kobel series consists of deep, poorly drained, very slowly permeable soils that formed in clayey alluvium on White River bottom land areas. These soils are on broad flats and in depressions that were backswamps of the White River and its tributaries. They have a perched water table late in winter and early in spring. The native vegetation under which these soils formed was mixed hardwood forest. Slopes are 0 to 3 percent.

Kobel soils are geographically associated with Commerce, Jackport, and Dubbs soils. Commerce soils, on similar landscapes at slightly higher elevations, have a fine-silty control section and are somewhat poorly drained. Dubbs soils, on natural levees at higher elevations, have a fine-silty control section and are well drained. Jackport soils, on terraces at higher elevations, are acid.

Typical pedon of Kobel silty clay loam, 0 to 1 percent slopes, in a field in the SE1/4NE1/4NE1/4 sec. 10, T. 4 N., R. 4 W., Prairie County:

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) and very dark grayish brown (10YR 3/2) silty clay loam; weak fine subangular blocky structure; firm; common fine roots; slightly acid; clear smooth boundary.

B21g—4 to 20 inches; dark gray (10YR 4/1) silty clay; common medium prominent strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; very firm; few fine roots; shiny faces on peds; few slickensides which do not intersect; common fine dark concretions; neutral; clear smooth boundary.

B22g—20 to 36 inches; gray (10YR 5/1) silty clay; common medium distinct yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) and few medium faint dark gray mottles; moderate fine subangular blocky structure; very firm; few fine roots; shiny faces on peds; common fine dark concretions; mildly alkaline; gradual wavy boundary.

B3g—36 to 56 inches; gray (10YR 5/1) silty clay; common medium distinct yellowish brown (10YR 5/4) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; very firm; shiny faces on peds; common fine dark concretions; few black stains; moderately alkaline; gradual wavy boundary.

Cg—56 to 72 inches; gray (10YR 5/1) silty clay; common medium distinct yellowish brown (10YR 5/4 and 5/6) and strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; firm; common fine and medium dark concretions; common black stains; moderately alkaline.

The solum thickness ranges from about 36 to 60 inches. Reaction ranges from medium acid to neutral in the A horizon, from slightly acid to moderately alkaline in the B horizon, and from neutral to moderately alkaline in the C horizon.

The A horizon ranges from 4 to 8 inches in thickness. The A horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The B horizon has hue of 10YR, value of 4, 5, or 6, and chroma of 1. Mottles in shades of brown and yellow range from few to common. Texture is silty clay loam, silty clay, or clay.

The C horizon is similar in color to the B horizon. Texture is silty clay loam, silty clay, or clay. In some pedons, texture below a depth of 40 inches is fine sandy loam or silt loam.

Leadvale series

The Leadvale series consists of deep, moderately well drained, slowly permeable, nearly level to gently sloping soils that formed in loamy materials. These soils are on toe slopes of ridges, benches, and terraces in the Arkansas Valley area. The native vegetation under which these soils formed was mixed hardwood forest. Slopes range from 1 to 8 percent.

Leadvale soils are geographically associated with Amy, Enders, Sawyer, Sacul, Smithdale, and Taft soils. Amy soils, on flood plains, are poorly drained and do not have a fragipan. Enders soils, on side slopes, have a clayey control section and do not have a fragipan. Sawyer soils, on side slopes, do not have a fragipan. Sacul soils, also on side slopes, have a clayey control section and do not have a fragipan. Smithdale soils, on uplands slightly higher in elevation, do not have a fragipan. Taft soils, on terraces at slightly lower elevations, are somewhat poorly drained.

Typical pedon of Leadvale silt loam, 3 to 8 percent slopes, in a field in the SW1/4SW1/4NW1/4 sec. 16, T. 5 N., R. 10 W., Lonoke County:

Ap—0 to 6 inches; dark brown (10YR 4/3) silt loam; weak medium granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

B1—6 to 11 inches; strong brown (7.5YR 5/6) silt loam; weak medium subangular blocky structure; friable; common fine roots; few fine pores; strongly acid; clear wavy boundary.

B21t—11 to 20 inches; strong brown (7.5YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; patchy distinct clay films on faces of peds; few fine roots; few fine pores; very strongly acid; clear wavy boundary.

B22t—20 to 28 inches; yellowish brown (10YR 5/6) silty clay loam; common fine distinct grayish brown and strong brown mottles in the lower few inches; moderate medium subangular blocky structure; firm; patchy distinct clay films on faces of peds; few fine pores; few fine dark concretions; very strongly acid; clear smooth boundary.

Bx1—28 to 48 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct light brownish gray (10YR 6/2) and strong brown (7.5YR 5/6) mottles; weak coarse prismatic parting to moderate medium and coarse subangular blocky structure; firm, brittle; patchy distinct clay films on faces of peds; narrow seams of gray (10YR 6/1) silt loam between prisms; common fine pores; few fine dark brown and black concretions; very strongly acid; gradual wavy boundary.

Bx2—48 to 72 inches; mottled yellowish brown (10YR 5/4, 5/6), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) silt loam; weak coarse prismatic parting to moderate medium subangular blocky structure; firm, brittle; patchy distinct clay films on faces of peds; narrow seams of gray (10YR 6/1) silty clay loam between prisms; common fine pores; few fine dark brown and black concretions; very strongly acid.

The solum thickness ranges from about 50 to more than 72 inches. The depth to the fragipan ranges from about 18 to 36 inches. Reaction in this soil is strongly acid or very strongly acid throughout except where limed.

The A horizon ranges from 4 to 8 inches in thickness. The Ap horizon has hue of 10YR, value of 4, and chroma of 2 or 3; or it has hue of 10YR, value of 5, and chroma of 3.

The B1 and B2t horizons have hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8. Texture is silt loam, loam, or silty clay loam.

The Bx horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8; or some pedons lack a matrix color and are mottled in shades of brown, yellow, and gray. Texture is silt loam or silty clay loam.

The B3 and C horizons, where present, have the same color range as the Bx horizon. Texture is silty clay loam or silty clay.

Linker series

The Linker series consists of moderately deep, moderately permeable, moderately steep to steep, well drained soils that formed in loamy residuum of sandstone or interbedded sandstone and shale. These soils formed on ridgetops and side slopes. The native vegetation under which these soils formed was mixed hardwood forest. Slopes range from 12 to 25 percent.

Linker soils are geographically associated with Enders and Mountainburg soils. Enders soils, on similar landscapes, have a clayey control section. Mountainburg soils, also on similar landscapes, have a loamy-skeletal control section and are less than 20 inches deep to bedrock.

Typical pedon of Linker stony fine sandy loam from an area of Linker-Enders-Mountainburg complex, 12 to 25 percent slopes, in a wooded area in the SW1/4SW1/4NE1/4 sec. 22, T. 4 N., R. 10 W., Lonoke County.

A1—0 to 4 inches; dark brown (10YR 4/3) stony fine sandy loam; weak medium granular structure; very friable; about 20 percent sandstone fragments 3 to 18 inches or more in diameter; common fine roots; strongly acid; clear wavy boundary.

B1—4 to 12 inches; strong brown (7.5YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; about 10 percent by volume sandstone fragments 3 to 10 inches in diameter; few fine roots; very strongly acid; clear wavy boundary.

B2t—12 to 28 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; patchy thin clay films on peds; about 10 percent by volume sandstone fragments 3 to 10 inches in diameter; very strongly acid; clear wavy boundary.

B3—28 to 38 inches; yellowish red (5YR 5/6) loam; common medium distinct strong brown (7.5YR 5/6) and pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; about 10 percent by volume sandstone fragments 3 to 10 inches in diameter; very strongly acid; abrupt irregular boundary.

R—38 to 40 inches; sandstone bedrock.

The solum thickness and depth to bedrock range from 20 to 40 inches. Reaction is very strongly acid or strongly acid throughout.

The A horizon ranges from 4 to 6 inches in thickness. The A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 2, 3, or 4. The Ap horizon, where present, has hue of 10YR, value of 4, and chroma of 2, 3, or 4; or it has hue of 10YR, value of 5, and chroma of 3. Some pedons have an A2 horizon that has hue of 10YR, value of 5, and chroma of 3 or 4. Coarse fragments make up 5 to 25 percent, by volume, of the A horizon.

The B1 horizon has hue of 7.5YR, value of 5, and chroma of 6; or it has hue of 5YR, value of 4 or 5, and chroma of 6 or 8. Texture is fine sandy loam, sandy clay loam, or loam. The B2t horizon has hue of 2.5YR or 5YR, value or 4 or 5, and chroma of 6 or 8. Texture is sandy clay loam, clay loam, or loam. Coarse fragments make up as much as 10 percent, by volume, of the B1 and B2t horizons.

The B3 horizon has colors similar to those of the B2t horizon and contains mottles in shades of red, brown,

TABLE [illegible].--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor"]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
1-------------------- Amy	Poor	Fair	Fair	Good	Fair	Good	Poor	Fair	Good	Fair.
2-------------------- Calhoun	Poor	Fair	Fair	Good	---	Good	Good	Fair	Fair	Good.
3-------------------- Calloway	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
4-------------------- Caspiana	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
5-------------------- Commerce	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
6-------------------- Commerce	Poor	Fair	Fair	Good	---	Fair	Fair	Fair	Good	Fair.
7-------------------- Crowley	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
8, 9---------------- Dubbs	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
10------------------ Enders	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
11------------------ Hebert	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
12------------------ Jackport	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
13------------------ Jackport	Fair	Fair	Fair	Fair	---	Fair	Poor	Fair	Fair	Fair.
14, 15-------------- Keo	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
16------------------ Kobel	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
17------------------ Kobel	Poor	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
18------------------ Leadvale	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
19------------------ Leadvale	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
20*:										
Linker--------------	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Enders--------------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Mountainburg--------	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1-------------------- Amy	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
2-------------------- Calhoun	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
3-------------------- Calloway	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
4-------------------- Caspiana	Moderate: wetness, percs slowly.	Moderate: seepage, wetness.	Moderate: wetness.	Moderate: wetness.	Fair: too clayey.
5-------------------- Commerce	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: thin layer.
6-------------------- Commerce	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: thin layer.
7-------------------- Crowley	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
8, 9----------------- Dubbs	Slight------------	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
10------------------- Enders	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack.
11------------------- Hebert	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, wetness.
12, 13--------------- Jackport	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
14, 15--------------- Keo	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight------------	Good.
16------------------- Kobel	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
17------------------- Kobel	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
18, 19--------------- Leadvale	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock.	Moderate: depth to rock, wetness.	Fair: area reclaim, too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable"]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
1-------------------- Amy	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
2-------------------- Calhoun	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
3-------------------- Calloway	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
4-------------------- Caspiana	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
5, 6----------------- Commerce	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
7-------------------- Crowley	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
8, 9----------------- Dubbs	Good------------------	Improbable: excess fines.	Improbable: excess fines.	Good.
10------------------- Enders	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, small stones.
11------------------- Hebert	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
12, 13--------------- Jackport	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
14, 15--------------- Keo	Good------------------	Improbable: excess fines.	Improbable: excess fines.	Good.
16, 17--------------- Kobel	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
18, 19--------------- Leadvale	Fair: area reclaim, low strength, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Good.
20*:				
Linker---------------	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Enders---------------	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, small stones.
Mountainburg---------	Poor: area reclaim, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
19----------------- Leadvale	Moderate: seepage, depth to rock.	Severe: piping.	Percs slowly, slope.	Wetness, percs slowly, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
20*: Linker-------------	Moderate: seepage, depth to rock.	Severe: piping.	Deep to water	Droughty, depth to rock, slope.	Slope, depth to rock.	Slope, droughty, depth to rock.
Enders-------------	Moderate: depth to rock.	Moderate: hard to pack.	Deep to water	Percs slowly, slope, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
Mountainburg------	Severe: depth to rock, seepage.	Severe: large stones, thin layer.	Deep to water	Slope, large stones, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
21----------------- Loring	Moderate: seepage.	Moderate: piping.	Favorable------	Wetness, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
22----------------- Loring	Moderate: seepage.	Moderate: piping.	Slope-----------	Wetness, rooting depth, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.
23*: Loring------------	Moderate: seepage.	Moderate: piping.	Slope-----------	Wetness, rooting depth, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
McKamie-----------	Slight----------	Moderate: shrink-swell, compressible.	Slope-----------	Slope, erodes easily, slow intake.	Slope, erodes easily, percs slowly.	Slope, erodes easily.
24----------------- Moreland	Moderate: seepage.	Severe: hard to pack, wetness.	Percs slowly---	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
25----------------- Muskogee	Slight----------	Moderate: hard to pack, wetness.	Percs slowly, slope.	Wetness, percs slowly, slope.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
26----------------- Oaklimeter	Moderate: seepage.	Severe: piping, wetness.	Flooding--------	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
27----------------- Perry	Slight----------	Severe: hard to pack, wetness.	Percs slowly---	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, rooting depth, percs slowly.
28----------------- Perry	Slight----------	Severe: hard to pack, wetness.	Percs slowly, flooding.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, rooting depth, percs slowly.
29----------------- Portland	Moderate: seepage.	Severe: hard to pack, wetness.	Percs slowly---	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
30----------------- Rilla	Moderate: seepage.	Moderate: piping.	Deep to water	Erodes easily	Erodes easily	Favorable.
31----------------- Rilla	Moderate: seepage.	Moderate: piping.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
32----------------- Sacul	Slight----------	Severe: hard to pack.	Percs slowly, slope.	Percs slowly, slope.	Percs slowly---	Percs slowly.
33----------------- Sawyer	Slight----------	Severe: hard to pack.	Percs slowly, slope.	Wetness, percs slowly, slope.	Erodes easily, wetness, percs slowly.	Erodes easily, percs slowly.

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
11------------------ Hebert	0-14	Silt loam--------	ML, CL-ML	A-4	0	100	100	100	65-100	<27	NP-7
	14-36	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	100	100	100	85-100	31-45	11-22
	36-72	Very fine sandy loam, silty clay loam, silt loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	60-100	22-40	3-18
12, 13------------ Jackport	0-4	Silty clay loam	CL, CH	A-6, A-7	0	100	100	95-100	85-100	30-55	12-30
	4-10	Silty clay, clay	CH	A-7	0	100	100	95-100	90-100	51-85	25-55
	10-36	Clay--------------	CH	A-7	0	100	100	95-100	90-100	65-85	35-55
	36-55	Clay, silty clay, silty clay loam.	CH	A-7	0	100	100	95-100	90-100	51-85	25-55
	55-72	Silty clay, silty clay loam, silt loam.	CH, CL	A-7	0	100	100	95-100	90-100	45-75	20-45
14, 15------------ Keo	0-30	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	80-95	<30	NP-7
	30-72	Silt loam, fine sandy loam, very fine sandy loam.	ML, CL, SM, CL-ML	A-4, A-6, A-2	0	100	100	70-100	25-95	<40	NP-15
16, 17------------ Kobel	0-4	Silty clay loam	CL, CH	A-7	0	100	100	95-100	85-95	45-55	25-35
	4-56	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	90-95	45-75	25-50
	56-72	Sandy clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	85-95	60-75	45-70	25-45
18, 19------------ Leadvale	0-6	Silt loam--------	ML, CL-ML, CL	A-4	0	100	95-100	85-95	65-85	18-32	2-10
	6-11	Silt loam, silty clay loam.	CL-ML, CL, ML	A-4, A-6	0	100	95-100	90-98	75-90	22-36	3-14
	11-28	Silt loam, silty clay loam.	CL-ML, CL, ML	A-4, A-6, A-7	0	100	95-100	80-98	70-90	23-42	3-18
	28-72	Silty clay loam, silty clay, silt loam.	CL, MH, ML	A-6, A-7	0-5	90-100	90-100	85-95	70-90	32-58	12-26
20*:											
Linker-----------	0-4	Stony fine sandy loam.	SM, ML, CL-ML	A-4	5-30	80-100	70-95	55-80	40-60	<30	NP-7
	4-35	Fine sandy loam, sandy clay loam, loam.	CL, SC, SM, ML	A-4, A-6	0-10	90-100	80-100	70-100	40-80	<40	NP-18
	35-40	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Enders-----------	0-3	Stony fine sandy loam.	SM, ML, SM-SC,	A-4, A-2	20-40	80-90	70-80	65-75	30-60	20-35	2-10
	3-8	Stony loam, stony silt loam.	SM, ML, SM-SC, CL-ML	A-4	20-40	80-90	70-80	65-75	40-60	20-35	2-10
	8-42	Silty clay, clay	CH	A-7	0	95-100	85-100	85-100	70-95	50-65	30-40
	42-52	Silty clay, shaly silty clay.	CH	A-7	0-15	50-95	50-95	40-95	40-95	50-65	30-40
	52-72	Weathered bedrock, unweathered bedrock.	---	---	---	---	---	---	---	---	---
Mountainburg----	0-9	Stony fine sandy loam.	GM	A-1, A-2	30-60	40-50	30-50	20-40	15-25	<20	NP
	9-18	Very gravelly sandy clay loam, very gravelly loam, very gravelly sandy loam.	GM, GC, GM-GC	A-1, A-2	15-60	40-60	30-50	25-50	20-30	<30	NP-10
	18-20	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cm3	In/hr	In/in	pH				Pct
[illegible]: [illegible]	0-19	15-25	1.25-1.60	0.6-2.0	0.13-0.24	4.5-5.5	Low	0.43	5	.5-2
	19-66	20-32	1.25-1.50	0.06-0.2	0.16-0.24	4.5-5.5	Low	0.43		
	66-72	15-35	1.25-1.60	0.6-2.0	0.11-0.15	4.5-5.5	Low	0.43		
[illegible]: Calhoun	0-18	10-27	1.30-1.65	0.2-0.6	0.21-0.23	4.5-6.0	Low	0.49	3	.5-2
	18-72	18-35	1.30-1.70	0.06-0.2	0.20-0.22	4.5-7.8	Moderate	0.43		
[illegible]: Calloway	0-26	10-30	1.40-1.55	0.6-2.0	0.20-0.23	4.5-6.0	Low	0.49	3	.5-2
	26-60	10-32	1.35-1.55	0.06-0.2	0.09-0.12	4.5-6.0	Moderate	0.43		
	60-72	18-32	1.45-1.55	0.06-0.2	0.09-0.12	5.1-7.8	Low	0.43		
[illegible]: Caspiana	0-11	10-27	1.30-1.65	0.6-2.0	0.21-0.23	5.6-8.4	Low	0.37	5	2-4
	11-36	20-35	1.30-1.75	0.6-2.0	0.20-0.22	5.6-8.4	Moderate	0.32		
	36-72	10-35	1.30-1.65	0.6-2.0	0.15-0.23	6.1-8.4	Low	0.32		
[illegible]: Commerce	0-5	14-27	1.35-1.65	0.6-2.0	0.21-0.23	5.6-7.8	Low	0.37	5	2-4
	5-72	14-39	1.35-1.70	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	0.32		
[illegible]: Commerce	0-5	14-27	1.35-1.65	0.6-2.0	0.21-0.23	5.6-7.8	Low	0.37	5	2-4
	5-72	14-39	1.35-1.70	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	0.32		
[illegible]: Crowley	0-22	10-27	1.30-1.65	0.2-0.6	0.20-0.23	4.5-8.4	Low	0.43	4	.5-2
	22-53	35-50	1.20-1.80	<0.06	0.19-0.21	4.5-6.5	High	0.32		
	53-72	27-55	1.30-1.80	0.06-0.2	0.20-0.22	5.6-8.4	Moderate	0.32		
[illegible]: [illegible]	0-12	5-18	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low	0.37	5	.5-2
	12-38	20-35	1.45-1.55	0.6-2.0	0.18-0.22	4.5-6.0	Moderate	0.37		
	38-52	10-25	1.40-1.50	2.0-6.0	0.20-0.22	4.5-6.0	Low	0.37		
	52-72	5-20	1.40-1.50	2.0-6.0	0.10-0.15	4.5-6.0	Low	0.32		
[illegible]: [illegible]	0-8	10-25	1.25-1.60	0.6-2.0	0.15-0.22	3.6-5.5	Low	0.43	3	2-4
	8-42	35-60	1.15-1.45	<0.06	0.09-0.13	3.6-5.5	High	0.24		
	42-52	35-60	1.25-1.45	<0.06	0.11-0.13	3.6-5.5	Moderate	0.24		
	52-72	---	---	---	---	---	-----	---		
[illegible]: [illegible]	0-14	10-27	1.30-1.65	0.6-2.0	0.21-0.23	5.1-7.3	Low	0.37	4	.5-2
	14-36	14-35	1.30-1.80	0.2-0.6	0.18-0.22	4.5-6.5	Moderate	0.32		
	36-72	10-35	1.30-1.80	0.6-2.0	0.18-0.22	5.1-7.8	Low	0.37		
[illegible] 13: [illegible]	0-4	30-40	1.25-1.40	0.2-0.6	0.18-0.22	4.5-6.0	Moderate	0.43	5	.5-2
	4-10	45-65	1.15-1.35	<0.06	0.12-0.18	4.5-5.5	High	0.32		
	10-38	60-80	1.15-1.30	<0.06	0.12-0.18	4.5-5.5	High	0.32		
	38-55	30-70	1.15-1.40	<0.06	0.12-0.18	4.5-7.8	High	0.32		
	55-72	25-50	1.20-1.45	<0.2	0.14-0.24	5.1-8.4	High	0.43		
[illegible] 15: [illegible]	0-30	5-20	1.25-1.60	0.6-2.0	0.13-0.24	6.1-7.8	Low	0.37	5	2-4
	30-72	10-35	1.25-1.60	0.6-6.0	0.07-0.24	6.6-8.4	Low	0.37		
[illegible] 17: [illegible]	0-4	30-40	1.25-1.50	0.2-0.6	0.18-0.22	5.1-7.3	Moderate	0.43	5	2-4
	4-56	35-55	1.15-1.50	<0.06	0.12-0.22	6.1-8.4	Very high	0.37		
	56-72	30-50	1.20-1.50	0.06-0.2	0.14-0.22	6.6-8.4	High	0.37		
[illegible] 19: [illegible]	0-6	12-22	1.30-1.40	0.6-2.0	0.17-0.22	4.5-5.5	Low	0.43	3	.5-2
	6-11	20-32	1.30-1.50	0.6-2.0	0.17-0.20	4.5-5.5	Low	0.43		
	11-28	20-35	1.55-1.70	0.06-0.6	0.06-0.11	4.5-5.5	Low	0.43		
	28-72	20-45	1.40-1.60	0.06-0.6	0.06-0.11	4.5-5.5	Low	0.24		
[illegible]: [illegible]	0-4	5-20	1.30-1.60	0.6-2.0	0.09-0.15	3.6-5.5	Low	0.20	3	.5-3
	4-38	18-35	1.30-1.60	0.6-2.0	0.11-0.20	3.6-5.5	Low	0.32		
	38-40	---	---	---	---	---	-----	---		

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
1----- Amy	D	Frequent----	Brief to very long.	Dec-Jun	0-1.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
2----- Calhoun	D	None--------	---	---	0.5-2.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
3----- Calloway	C	None--------	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	High-----	Moderate.
4----- Caspiana	B	None--------	---	---	>4.0	Apparent	Dec-Apr	>60	---	Moderate	Low.
5----- Commerce	C	None--------	---	---	1.5-4.0	Apparent	Dec-Apr	>60	---	High-----	Low.
6----- Commerce	C	Frequent----	Brief to long.	Dec-May	1.5-4.0	Apparent	Dec-Apr	>60	---	High-----	Low.
7----- Crowley	D	None--------	---	---	0.5-1.5	Perched	Dec-Apr	>60	---	High-----	Moderate.
8, 9----- Dubbs	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
10----- Enders	C	None--------	---	---	>6.0	---	---	40-60	Soft	High-----	High.
11----- Hebert	C	None--------	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	High-----	Moderate.
12, 13----- Jackport	D	None--------	---	---	0-1.0	Perched	Dec-Apr	>60	---	High-----	High.
14, 15----- Keo	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Low.
16----- Kobel	D	None--------	---	---	0-1.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
17----- Kobel	[illegible]	Frequent----	Brief to long.	Oct-May	0-1.0	Perched	Dec-Apr	>60	---	High-----	Moderate.
18, 19----- Leadvale	C	None--------	---	---	2.0-3.0	Perched	Jan-Apr	>48	Soft	Moderate	Moderate.
20*: Linker-----	B	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	High.
Enders-----	C	None--------	---	---	>6.0	---	---	40-60	Soft	High-----	High.
Mountainburg-----	D	None--------	---	---	>6.0	---	---	12-20	Hard	Low------	Moderate.
21, 22----- Loring	C	None--------	---	---	2.0-3.0	Perched	Dec-Mar	>60	---	Moderate	Moderate.
23*: Loring-----	C	None--------	---	---	2.0-3.0	Perched	Dec-Mar	>60	---	Moderate	Moderate.
McKamie-----	D	None--------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
24----- Moreland	D	None--------	---	---	0-1.5	Perched	Dec-Apr	>60	---	High-----	Low.

See footnote at end of table.

REFERENCE 42

IF THE PAGE FILMED IS NOT AS LEGIBLE AS THIS LABEL, IT IS DUE TO THE QUALITY OF THE ORIGINAL.

REFERENCE 2

OWNER

City of Cabot

Lots 1, 2 & Pt. 5 SW¼ 118.25

SECTION 6 TOWNSHIP 4N RANGE 9W

S/D Cabot

6297

APPRAISAL SUMMARY

YEAR			
LAND			
BUILDINGS			
TOTAL			

APPRAISAL

TYPE	ACRES	CODE	UNIT	TOTAL	ACRES	CODE	UNIT	TOTAL
HOUSE LOT								
HOUSE LOT								
	LOCATION				LOCATION			

YEAR		
LAND		
BLDGS		
TOTAL		
YEAR		
LAND		
BLDGS		
TOTAL		
YEAR		
LAND		
BLDGS		
TOTAL		
YEAR		
LAND		
BLDGS		
TOTAL		
YEAR		
LAND		
BLDGS		
TOTAL		
YEAR		
LAND		
BLDGS		
TOTAL		

DATE	BOOK	PAGE	CONSIDERATION	REMARKS

ROADS	
PAVED 4 LANE WITH PAVED ACCESS ROAD	
PAVED 4 LANE WITH ACCESS ROAD	
PAVED 2 LANE	
TREATED SURFACE	
GRAVEL	
DIRT	
LAND IMPROVEMENTS IRRIGATION	

GRAPHIC LOCATION

N W E S

UTILITIES	GENERAL LOCATION
ELECTRIC	POST OFFICE
TELEPHONE	NEAREST TOWN
GAS	DIST. TO TOWN
WATER	DIST. TO TOWN
WATER SUPPLY	DIST. TO COUNTY SEAT
MUNICIPAL SEWAGE	DIST. TO SCHOOL

BY	DATE	REMARKS

ARKANSAS
ASSESSMENT COORDINATION DIVISION

REFERENCE 43

E+

ecology and
environment, inc.

International Specialists in the Environment

Job Number

Cabot Landfill
Cabot/Lonoke/Arkansas

E & E Job Number ____________

Telephone Code Number ____________

Site Name ____________

____

City/State ____________

TDD ____________

PAN ____________

SSID ____________

Start/Finish Date ______ / ______

Book _____ of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

2 1/25/91

Team members Michael Watson and Julie Koke arrived at The Cabot city hall @ 10:20 To Talk To The Mayor, J. Smith
The Cabot dump has no MWS
Private Well:
R.C. HINSON (501)-843-5000
RT5 Box 442
72023

Roll 1:
Photo #1-#11 - Complete scan
NW To NE 180°
BOTH CELLS

Photo #12 - DRAINAGE DITCH, N.E.
Photo #13 ABANDONED TIRES, WEST
Photo #1, Roll 2 - RESIDENTIAL AREA, EAST

* No DETECTABLE ODOR, NOT CHARACTERISTIC OF A LANDFILL (1110) AT TIRE LOCATION

Photo #2, Roll - Manmade
Stock Pond, NOT A RESULT OF LANDFILL

3

* NO ODOR DETECTED IN VICINITY OF STOCK POND

PHOTO #3, Roll 2
Intermittent Spring not due to landfill (willow trees / cat tails)

PHOTO #4, #5, Roll 2
General area of spring & willow trees.

PHOTO #6, Roll
POND RESULTING FROM SPRING

* Depth of cup (2 ft)

PHOTO #7 - #13
MOST RECENT CELL (CAPPED IN APPROXIMATELY 1985) W to E 180'
* No DETECTABLE ODOR AT CELL

Apparently healthy birds and wildlife noted residing on premises.

1/28/91
Talked To J. Smith about Sampling locations. He asked That The CREEK To The North of The SITE (?) be sampled. No other Request was made (2:45pm)

982-8324
843-3566 - City of Cabot
843-2021 - Andy Dedman

Location of Spring.
North side of Landfill Just about in The Northwest CORNER

Permission To sample well granted for Ma[redacted] 1991 by [redacted] His [redacted] 15' deep. The water has a high iRon content. THERE is another well in The area owned by a Mrs. Sheets (location known by [redacted]

REFERENCE 44

ecology and environment, inc.
1509 MAIN STREET, DALLAS, TEXAS 75201, TEL. 214-742-6601
International Specialists in the Environment

MEMORANDUM

TO: Ed Sierra, Region VI RPO

THRU: K. H. Malone, Jr., FITOM

FROM: Michael Watson, FIT Chemist

DATE: February 14, 1991 **TDD:** F06-9011-17 **PAN:** FAR0274SAF

SUBJECT: Screening Site Inspection Work Plan
Cabot Landfill
Cabot, Lonoke County, AR
(ARD983269275)

Attached is the Screening Site Inspection Work Plan of Cabot Landfill.

SCREENING SITE INSPECTION WORK PLAN

OF

CABOT LANDFILL

(ARD983269275)

Prepared By

Michael Watson, FIT Chemist

Ecology and Environment, Inc.
Region VI

February 14, 1991

ecology and environment, inc.
1509 MAIN STREET, DALLAS, TEXAS 75201, TEL. 214-742-6601
International Specialists in the Environment

recycled paper

PREFACE

This Screening Site Inspection Work Plan was prepared by Ecology and Environment, Inc. for the Environmental Protection Agency under Contract Number 68-01-7347.

SCREENING SITE INSPECTION WORK PLAN

OF

CABOT LANDFILL

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1.2 SITE DESCRIPTION AND HISTORY	1
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2.2 GROUND WATER PATHWAY	2
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Figure	Title
1	Site Location Map
2	Site Sketch
3	Sample Location Map

TABLES

Table	Title
1	Sampling Locations and Rationale
2	Level of Effort Hours

1. INTRODUCTION

The Ecology and Environment, Inc. (E & E) Region VI Field Investigation Team (FIT) was tasked by the U. S. Environmental Protection Agency (EPA) under Technical Directive Document (TDD) F06-9011-17 to develop the Work Plan for the Screening Site Inspection (SSI) of Cabot Landfill (ARD983269275) in Cabot, Lonoke, County, Arkansas.

1.1 SCREENING SITE INSPECTION OBJECTIVES

The SSI evaluates the potential risks associated with hazardous waste generation, storage and disposal at the site. It expands upon data collected during the Preliminary Assessment (PA) and identifies data gaps. Information obtained during the SSI supports the management decision of whether the site proceeds to the Listing Site Inspection (LSI) or receives the classification of No Further Action under the Superfund Amendments and Reauthorization Act (SARA).

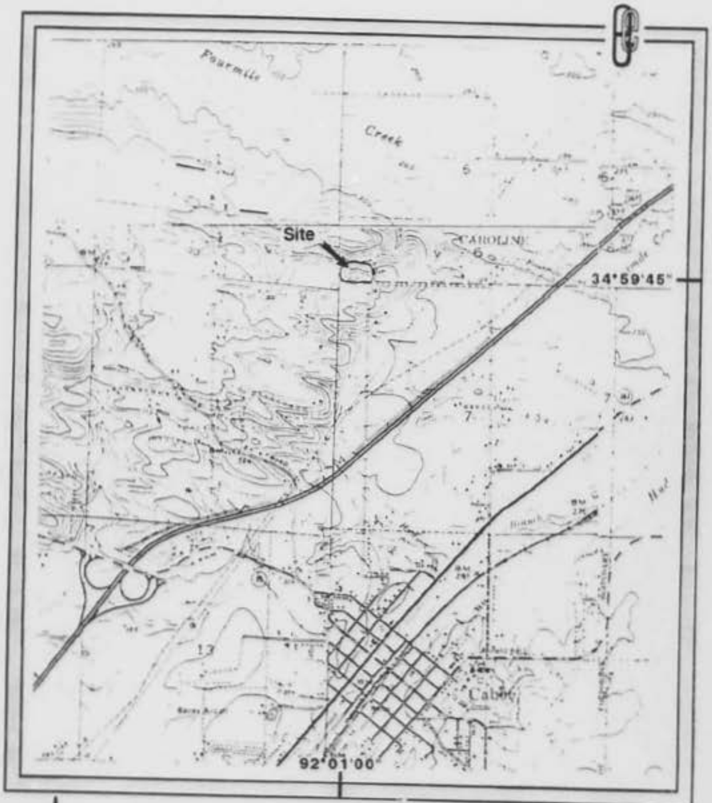
1.2 SITE DESCRIPTION AND HISTORY

Cabot Landfill is located 1/4 mile west of the north end of Willie Ray Road in Cabot, Lonoke County, Arkansas. The legal description of the landfill property is Lot 1, Lot 2 and the southwest quarter of Lot 5 of Section 6, Township 4 North, Range 9 West. The geographical coordinates are 34°59'45" north latitude and 92°01'00" west longitude (Figure 1) (Ref. 1, p. 1).

The landfill (Figure 2) was primarily used for the disposal of domestic, commercial and institutional wastes. The site was purchased by the City of Cabot for use as a municipal landfill. The area of the site is 118.25 acres. The State permitted 6.4 acres for landfill use in 1975 and approved an additional 8.5 acres in 1981. A state inspection (June 24, 1980) found that the landfill had extended beyond its permitted or approved boundaries. The actual size of the landfill is not known (Ref. 1, p. 1).

Cabot Landfill was cited by the State for exceeding permitted boundaries, leachate problems and overall poor conditions. A state inspection on February 19, 1981 revealed 34 55-gallon drums. The majority of the drums were labeled paint stripper. Several drums were bulging at the ends. The shipping address for the drums was Falcon Jet of Little Rock, Arkansas. One drum was labeled Dreamline Manufacturing, Cabot, Arkansas. The drum was labeled lacquer sealer and had been burned. Two drums of Penwalt E-Z-Strip were resting on their sides and leaking. There was also one drum of adhesive that had been leaking (Ref. 1, pp. 1-2). The drums were removed from the landfill by the depositor at the request of the City of Cabot (Ref. 2).

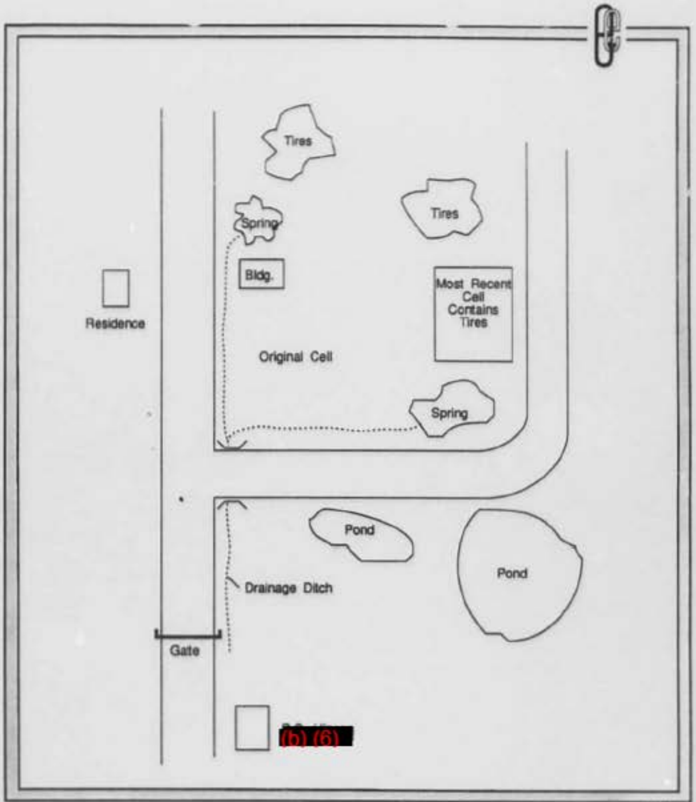
A resident near the landfill stated that there is an abandoned well beneath the landfill. He also claimed that there are springs located in the landfill. A State agent suspected that this was the cause of the leachate problem (Ref. 1, p. 2). The abandoned well belonged to a



0 2000'

Scale 1:24000

FIGURE 1
SITE LOCATION MAP
CABOT LANDFILL
CABOT, ARKANSAS
ARD983269275



Not to Scale

FIGURE 2
SITE SKETCH
CABOT LANDFILL
CABOT, ARKANSAS
ARD983269275

farmhouse (previous owner). The farmhouse was demolished and deposited in the landfill. The well was plugged and is not located in either of the landfill's cells (Ref. 2).

Wastes disposed at the site were supposed to be covered daily with six inches of compacted soil. A final cover (two feet of compacted soil and four inches of topsoil) was supposed to be applied and seeded at closure. The landfill was 75% closed by December 22, 1986. Final closure was scheduled for September 15, 1987 by the Arkansas Department of Pollution Control and Ecology (ADPC&E) (Ref. 1, p. 1).

2. NON-SAMPLING DATA

The FIT PA of Cabot Landfill was submitted to the EPA on October 31, 1990. The PA consisted of a search of EPA files, background data collection and target identification (Ref. 1).

The FIT on-site reconnaissance inspection was conducted on January 26, 1991 to identify potential waste sources, collect background data, identify targets and formulate the sampling plan. A photographic log of the inspection is attached as an Appendix to this Work Plan.

The following sections briefly characterize sources and migration pathways, and identify background and site environmental data that remain to be collected or verified during the SSI.

2.1 SOURCE WASTE CHARACTERIZATION

The only potential on-site source is the landfill itself. There are no known CERCLA-defined wastes. This will be addressed during sampling.

2.2 GROUND WATER PATHWAY

Cabot Landfill appears to exist upon soils of the Midway Group (Tertiary Period). The Midway Group is defined as a clay confining layer which does not yield water to wells. The Midway Group is underlain by Paleozoic rocks, undifferentiated sandstones, shales, limestones and dolomites. This layer generally yields less than 10 gallons a minute to wells (Ref. 3, Figure 3.0-1). Test hole 9 (NW1/4, NE1/4, NW1/4, Sec. 18, T.4N, R.9W) (Lonoke County) exhibits these characteristics (Ref. 4, p. 31). Primary drinking water standards are exceeded by wells in the area which utilize Tertiary aquifers (Ref. 3, Figure 5.0-1).

The fact that the wells in the area are few, low yielding, and of poor quality reduces the importance of the ground water pathway as an area of concern (Ref. 2; Ref. 3; Ref. 4).

2.3 SURFACE WATER PATHWAY

Leachate from the landfill could enter Four Mile Creek, which runs adjacent to the landfill and travels through an unpopulated area (Ref. 1).

2.4 SOIL EXPOSURE PATHWAY

Entrance to the landfill is inhibited by a single gate which blocks the private road to the site. The location is remote and the landfill is not fenced or guarded.

The ground cover is thick and healthy. Stressed vegetation could not be found anywhere on-site.

2.5 AIR PATHWAY

During the on-site reconnaissance inspection, the FIT noted that there was no odor of municipal waste. The site does not appear to be a source of volatile or particulate air contamination.

3. SAMPLING DATA

Analytical data and the proposed sampling methodology are described below.

3.1 EXISTING ANALYTICAL DATA

No analytical data could be located.

3.2 SAMPLING METHODOLOGY

The pathway of greatest concern is the surface water. There is a low probability of migration via the air, soil and ground water routes. The objectives of sampling are threefold: to identify any on-site contamination and determine contaminant migration through the collection of soil and surface water samples; to determine whether Cabot Landfill poses a threat to any surface water body; and to determine whether any hazards to workers and nearby residents exist.

The FIT proposes the collection of six surface water, seven soil and three ground water samples, including background and required duplicates (Figure 3) (Table 1). A trip blank will be included with each set of water samples.

Water and soil samples will be collected to determine whether soil contamination exists, whether off-site migration is a potential problem and whether the closure of the landfill has been successful.

All field activities will be conducted according to FIT Field Sampling Standard Operating Procedures.

4. PROJECT MANAGEMENT

Key personnel, level of effort and community relations are addressed below.

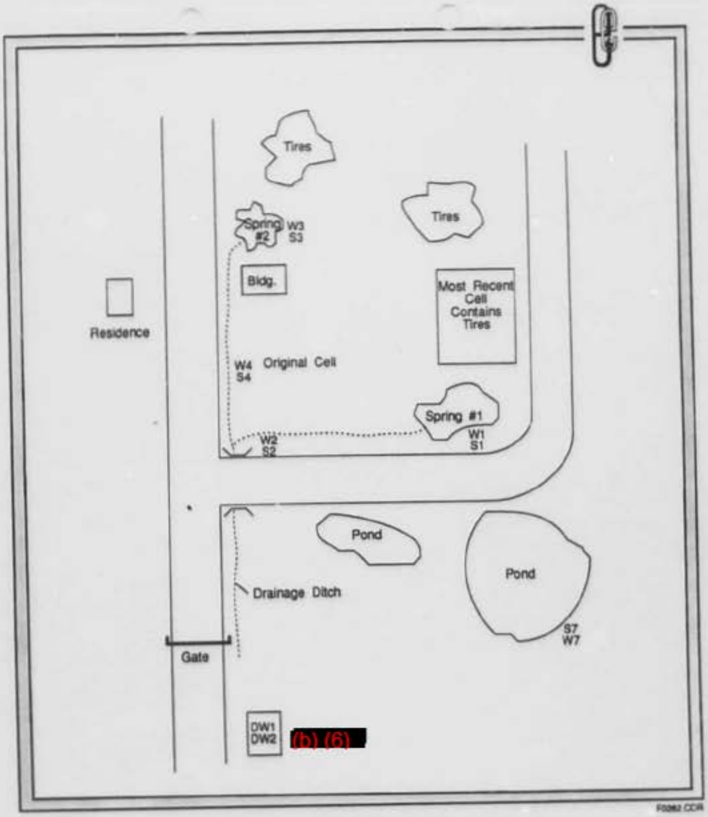


FIGURE 3
SAMPLE LOCATION MAP
CABOT LANDFILL
CABOT, ARKANSAS
ARD983269275

Not to Scale

TABLE 1
SAMPLING LOCATIONS AND RATIONALE

SAMPLE NUMBER	LOCATION	RATIONALE
W1	Spring #1	To locate soluble contaminants at source.
W2	Stream #1	To identify any soluble contaminants that are capable of migration from the source. Downgradient.
W3	Spring #2	To locate soluble contaminants at source.
W4	Stream #2	To locate soluble contaminants downgradient.
W5	To be determined	Duplicate. Quantity of water will be the limiting factor.
W6	Trip Blank	QA/QC control.
W7	Stock Pond	To determine if the pond has been subjected to leachate contamination.
S1	Spring #1	At source. To determine if the soil holds contaminants that may be attributed to the landfill.
S2	Stream #1	Downgradient. To determine if there has been any migration of contaminants from the source.
S3	Spring #2	At source. To determine if the soil holds contaminants that may be attributed to the landfill.
S4	Stream #2	Downgradient. To determine if there has been any migration of contaminants from the source.
S5	To be determined	Duplicate. At the location of W5.
S6	To be determined	Background.
S7	Stock Pond	To determine if the pond has been subjected to leachate contamination.
DW1	Domestic Well	[redacted].
DW2	Domestic Well	Duplicate.
DW3	Domestic Well	Location to be determined. To be used as a background sample.
DW4	Trip Blank	QA/QC control.

4.1 KEY PERSONNEL

The FIT Project Leader for this investigation is Michael Watson. The Project Leader is responsible for overseeing sampling and off-site activities. Other team members include the Site Safety Officer, who is responsible for directing the health and safety protocol, and three additional FIT members who will conduct sampling and decontamination.

The EPA Region VI Project Officer for this investigation is Bartolome J. Cannellas.

4.2 LEVEL OF EFFORT

The Level of Effort (LOE) hours are listed in Table 2. Sampling is scheduled for the week of March 4, 1991.

4.3 COMMUNITY RELATIONS

Persons requesting site information will be instructed to submit a Freedom of Information Act Request to: Freedom of Information Officer, U.S. EPA Region VI, 1445 Ross Avenue, Dallas, Texas 75202-2733. Reporters will be instructed to contact the Office of External Affairs at 214/655-2200.

TABLE 2

LEVEL OF EFFORT HOURS

Labor Task		Estimated LOE Hours
File Search		12
Review of File Information and Preparation of the Narrative Summary of Data Gaps		24
On-Site Reconnaissance Inspection		32
Develop Work Plan		32
Collect HRS Non-Sampling Data		32
Collect HRS Sampling Data (Field Sampling)		200
QA/QC of CLP Data		40
Prepare Final Report and HRS PreScore		80
Editing		24
Drafting		16
Miscellaneous		8
		500
	Plus 10% Contingency	50
	TOTAL EFFORT	550

Samples Required

7 Low Soil Samples
11 Low Water Samples
18 Total Samples

REFERENCES

1 Preliminary Assessment of Cabot Landfill, Lonoke County, Arkansas. Prepared by Ecology and Environment, Inc. for EPA Region VI. October 31, 1990.

2 Record of Communication. Cabot Landfill. From: Michael Watson and Julie J. Koke, Ecology and Environment, Inc. To: Andy Deadmon, Public Works Supervisor, City of Cabot, Arkansas. January 25, 1991. ARD983269275.

3 Ground Water Problems in Arkansas. United States Department of Interior Geological Survey. Little Rock, Arkansas. 1985.

4 Ground Water Resources of Parts of Lonoke Prairie and White Counties, Arkansas. Water Resources Circular No. 5. United States Geological Survey. 1957.

ATTACHMENT A

PHOTOGRAPHS

Photo No. 1A

Site Name Cabot Landfill

Location Cabot / Lonoke / Arkansas

CERCLIS # ARD983269275

Photographer/Witness Michael Watson / Julie Kohr

Date 1/25/91 Time 11:00 Direction

Description 180 degree scan (NW To NE) of both cells (1 of 4)

Page 1

Of 14

Photo No. [illegible]

Site Name CABOT LANDFILL

Location CABOT / Lonoke Arkansas

CERCLIS # ARD9E3269275

Photographer/Witness Michael Watson / Julie Koke

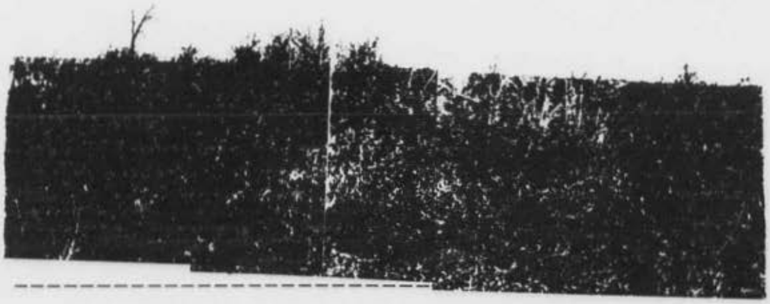
Date 1/25/91 Time 11:00 Direction

Description 180 degree scan (NW To NE) of both cells (2 of 4)

Page 2

Of 14

Photo No. 1



Site Name Cabot Landfill

Location Cabot/Lonoke/Arkansas

CERCLIS # ARD98E3269275

Photographer/Witness Michael Watson/Julie Koki

Date 1/25/91 Time 11:00 Direction

Description 180 degree scan (NW to NE) of both cells (3 of 4)

Page 3

Of 14

Photo No. 10

Site Name Cabot Landfill
Location Cabot / Lonoke / Arkansas
CERCLIS # ARD983269275
Photographer/Witness Michael Watson / Julie Koke
Date 1/25/91 Time 11:00 Direction
Description 180 degree scan (NW To NE) of both cells (4 of 4).

Page 4
Of 14

Site Name [illegible]

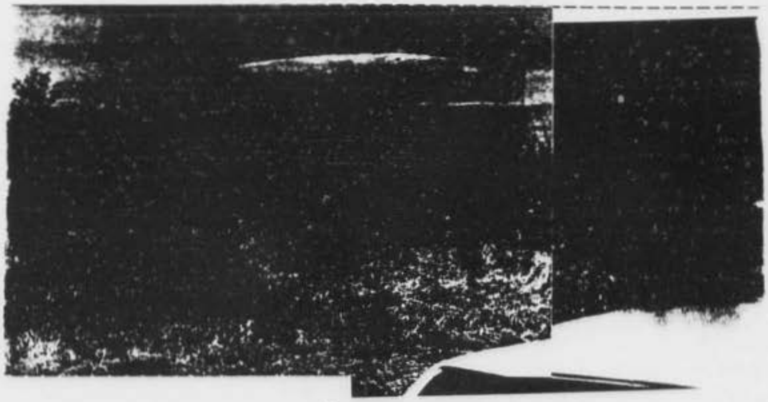
Location [illegible]

CERCLIS # [illegible]

Photo No. 2	Photo No. 3
Photographer/Witness Michael Waters/Julie Keke	Photographer/Witness [illegible]/Julie Keke
Date 1/25/91 Time [illegible]	Date 1/25/91 Time 11:30
Direction NE	Direction West
Description Drainage ditch contents originated at spring (intermittent)	Description Abandoned Tires

Page 5 of 14

Photo No. 4A



Site Name Cabot Landfill

Location Cabot / Lonoke / Arkansas

CERCLIS # ARD983269275

Photographer/Witness Michael Watson / Julie Koke

Date 1/25/91 Time 12:00 Direction West To East 180°

Description Most Recent cell (capped in 1985) (1 of 3).

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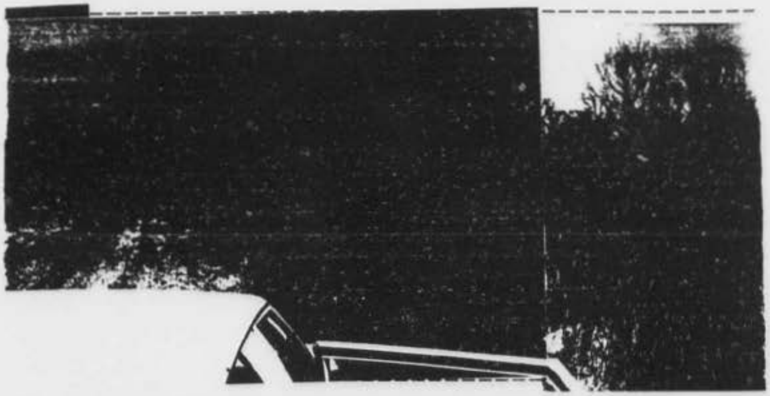
Photo No.
-3



Site Name: Cabot Landfill

Location: Cabot / Lonoke / Arkansas

CERCLIS #: ARD983269275

Photographer/Witness: Michael Watson / Julie Keke

Date: 1/25/91 Time: 12:00 Direction: West To East 180°

Description: West Recent cell (capped in 1985) (2 of 3)

Photo No. 9

Site Name Cabot Landfill

Location Cabot / Lonoke / Arkansas

CERCLIS # ARD983269275

Photographer/Witness Michael Watson / Julie Koke

Date 1/25/91 Time 12:00 Direction West To East 180°

Description Most Recent cell (capped in 1985)
(3 of 3)

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Photo No. 9A

Site Name Cabot Landfill
Location Cabot / Lonoke / Arkansas
CERCLIS # ARD983269275
Photographer/Witness Michael Watson / Julie Keke
Date 1/25/91 Time 12:25 Direction W To E
Description General Area of Spring & Willow Trees
(1 of 2)

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Photo No. 5B

Site Name Cabot Landfill

Location Cabot / Lonoke / Arkansas

CERCLIS # ARD983269275

Photographer/Witness Michael Watson / Julie Koke

Date 1/25/91 Time 12:25 Direction West To East

Description General Area of Spring & Willow Trees (2 of 3)

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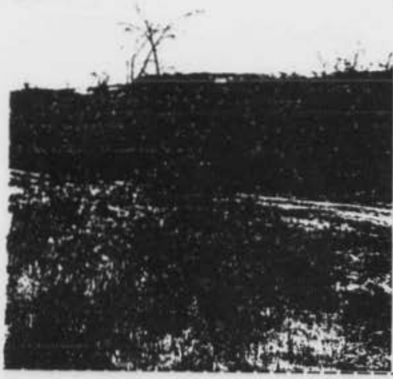
Photo No. 30



Site Name Cabot Landfill

Location Cabot/Lonoke/Arkansas

CERCLIS # ARD983269275

Photographer/Witness Michael Watson / Julie Keke

Date 1/25/91 Time 12:25 Direction West To East

Description General Area of Spring & Willow Trees (3 of 3).

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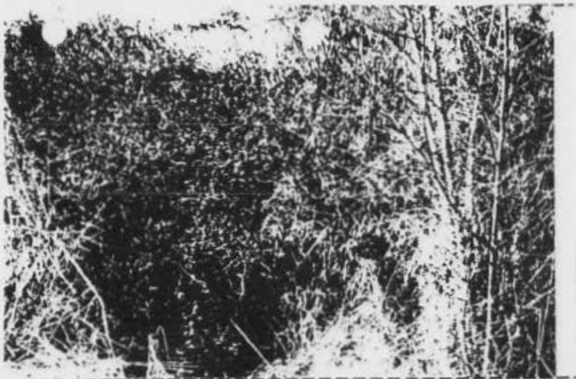
Photo No. 6



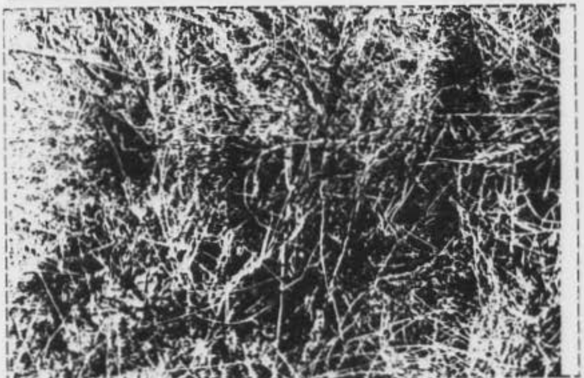
Photographer/Witness Michael Watson/Julie Keke
Date 1/25/91 Time 12.30 Direction North
Description Spring source (w/old willow saplings)

Site Name: Cabot Landfill

Location: Cabot/Lonoke/Arkansas

CERCLIS #: ARD985269275

Photo No. 7



Photographer/Witness Michael Watson/Julie Keke
Date 1/25/91 Time 12.30 Direction North
Description Spring Closeup

Photo No. 8

Photographer/Witness Michael Watson/Julie Keke
Date 1/23/91 Time 12:00 Direction South
Description Drainage pathway of Spring

Site Name: Cabot Landfill

Location: Cabot/Lonoke/Arkansas

CERCLIS #: ARD983269275

Photo No. 9

Photographer/Witness Michael Watson/Julie Keke
Date 1/23/91 Time ~12:00 Direction South
Description Pond resulting from Spring

Photo No. 10

Site Name: Cabot Landfill

Location: Cabot/Lonoke/Arkansas

CERCLIS #: ARD983269275

Photographer/Witness Michael Watson/Julie Keke
Date 1-25-91 Time ~12:30
Direction South
Description Stock Pond on site (not a result of the Landfill used by deer)

Photographer/Witness M Watson/Julie Keke
Date 1-25-91 Time ~11:00
Direction East
Description Residential Area (entrance to Landfill

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Photo No. 11

REFERENCE 45

RECORD OF COMMUNICATION

Reference 45

TYPE:	Telephone Call	**DATE:**	03/16/93	**TIME:**	10:00 a.m.

TO: Andy Dedmon, Public Works Supervisor, City of Cabot, Arkansas, 501-843-2021

FROM: Thomas Richie, Geologist, ICF Technology, Inc., 214-979-3900

SUBJECT: City of Cabot Landfill

SUMMARY OF COMMUNICATION:
Mr. Andy Dedmon stated that the depth of the cells at the landfill ranged from 4 to 10 feet below ground surface. He stated that they closed the landfill in 1986 or 1987. The State of Arkansas approved the closure of the landfill and there was a closure report but he did not know where it was. Mr. Dedmon stated that the landfill does not have a bottom liner, but the top was covered with a 2 foot clay cap and 4 inches of top soil which was seeded at the time of closure. He stated that the landfill covered an area of approximately 20 acres.